GefenPRO®

1080P PROGRESSIVE

HDMI® HIGH-DEFINITION MULTIMEDIA INTERFACE

8x8 Matrix for HDMI w/8 ELR-POL Outputs

GEF-HDFST-848-8ELR
User Manual

www.gefenpro.com

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INTRODUCTION

Congratulations on your purchase of the GefenPRO *8x8 Matrix for HDMI w/8 ELR Outputs.* Your complete satisfaction is very important to us.

About Gefen

We specialize in total integration for your home theater, while also focusing on going above and beyond customer expectations to ensure you get the most from your hardware. We invite you to explore our distinct product line. Please visit http://www.gefen.com for the latest offerings in High-Definition signal solutions or call us between the hours of 8:00 am and 5:00 pm Monday-Friday, Pacific Standard Time for assistance with your A/V needs. We'll be happy to assist you.

The GefenPRO 8x8 Matrix for HDMI

The GefenPRO 8x8 Matrix for HDMI with 8 ELR-POL Outputs and Bi-Directional IR routes up to eight Hi-Def sources at resolutions up to 1080p Full HD with Deep Color and multi-channel digital audio to any of eight HDTV displays, using FST to speed up HDCP authentication process. Each of the included ELR-POL Receivers units are used to extend HDMI to eight locations, using Gefen ELR (Extra Long Range) and POL (Power Over Line) technologies. ELR is based on HDBaseT® and allows the extension of HDMI using a single CAT-5e cable.POL eliminates the need to externally power the Receiver units. The GefenPRO 8x8 Matrix for HDMI supports 3DTV pass-through and 8 channel digital audio formats such as Dolby® TrueHD and DTS-HD Master Audio™. Each source is accessible at all times from any display location by using the included IR Remote, the RS-232 port, IP control (Telnet or Web GUI), or by using the front-panel push buttons. Bi-Directional IR allows the source to be controlled from the viewing location, when used with optional GEF-HDFST-8IRKIT which contains: (8) 6-ft mini stereo audio cable, (16) IR emitters, and (8) IR extender modules.The display can be controlled from the source location using IR commands. 3D content can be displayed when connecting a 3DTV and 3D source.

How It Works

Using HDMI cables, connect the Hi-Def sources to the eight HDMI inputs on the matrix. Connect up to eight HDTV displays to the included Receiver units, also using HDMI cables. Use a single CAT-5e cable, up to 330 feet (100 meters),to connect each of the Receiver units to the matrix. Connect the included AC power cord to the matrix and connect it to an available electrical outlet. Power to each of the Receiver units is delivered from the matrix. To control each Hi-Def source from the display location, connect an IR Extender to the IR Ext jack on each Receiver unit. Connect an IR Emitter to the corresponding IR Out for each source input on the matrix and place the IR emitter over the IR sensor of the Hi-Def source. Point the IR remote at the IR Extender (at the display location) to control the Hi-Def source. To control the display placed near the Receiver unit, connect the IR Emitter output from an automation device (such as the Gefen PACS or Mini PACS) to the corresponding IR Input on the matrix. Connect an IR emitter to the IR Out on each Receiver unit, and attach the IR emitter to the IR sensor of the display.

READ THESE NOTES BEFORE INSTALLING OR OPERATING THE 8X8 MATRIX FOR HDMI W/8 ELR-POL OUTPUTS

- EDID contains the A/V capabilities of a display device in regards to video resolutions and audio formats supported. This information is used by the source device to determine the format of the A/V signal on the outputs. The 8x8 Matri*x for HDMI w/8 ELR-POL Outputs* incorporates advanced EDID management to ensure compatibility with all sources and display devices. See pages 36 for more details.

- The GefenPRO *8x8 Matrix for HDMI w/8 ELR-POL Outputs* can detect the presence of Deep Color (12-bit signal) automatically and will disable Deep Color EDID features across all other outputs if any connected device or display is not capable of processing Deep Color. This automatic behavior ensures compatibility among all output devices in a mixed-device environment. This feature cannot be disabled.

- The Bi-directional IR capability of the GEF-HDFST-848-8ELR requires the optional GEF-HDFST-8IRKIT, which contains: (8) 6-ft mini stereo audio cable, (16) IR emitters, and (8) IR extender modules.

FEATURES

Supported HDMI Features

- Resolutions up to 1080p Full HD
- HDCP compliant
- 12-bit Deep Color
- x.v. Color
- LPCM 7.1 audio, Dolby® TrueHD, and DTS-HD Master Audio™
- 3DTV pass-through
- Lip-Sync pass-through

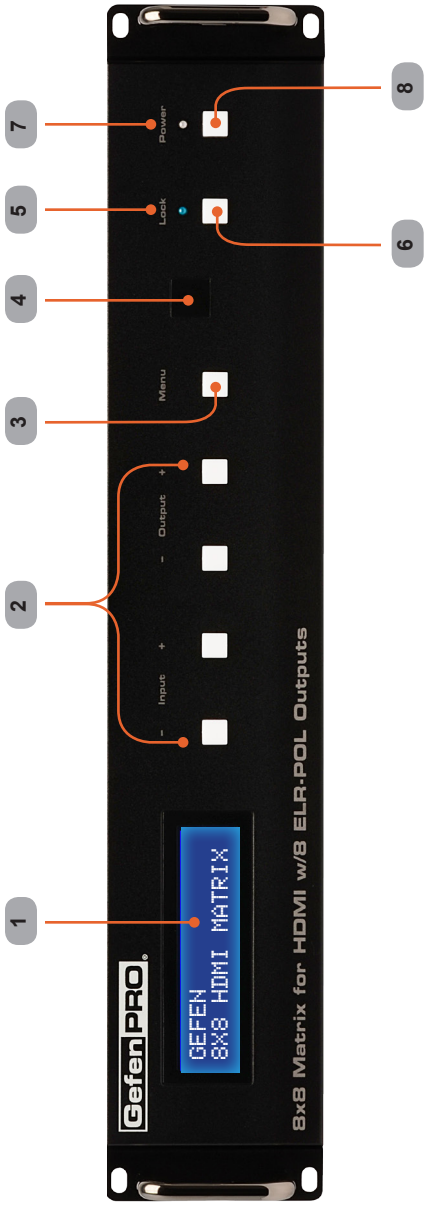
Features

- Routes any eight Hi-Def sources to any eight HD displays independently
- Sends and Receives IR signals from any of the 8 remote locations to the matrix, when used with optional GEF-HDFST-8IRKIT
- Includes eight ELR-POL receiver units
- ELR technology allows extension up to 330 feet (100 meters)
- POL feature provides power to each ELR receiver
- HDBaseT® technology
- Gefen FST speeds up the HDCP authentication process
- Fast and Slow FST Modes
- Advanced EDID Management for rapid integration of sources and displays
- Ability to save and recall presets
- Supports DVI sources and displays
- Field-upgradeable firmware via IP or RS-232
- Front Panel Switching
- IR Control of the matrix via front panel sensor and from each Receiver
- Serial (RS-232) control
- IP Control via Web Server and Telnet
- Rack mountable (2U tall, rack ears included)
- Internal power supply with detachable IEC AC cord
- Back panel master power switch

Package Includes

(1) 8x8 Matrix for HDMI w/8 ELR-POL
(1) Set of Rack Ears (Attached)
(8) Extender for HDMI ELR-POL w Bi-Directional IR (Receiver Unit)
(1) IR Remote Control
(1) AC Power Cord
(1) Quick-Start Guide

Front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2
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GefenPRO
GEFEN
8X8 HDMI MATRIX
8x8 Matrix for HDMI w/8 ELR-POL Outputs
Input
Output
Menu
Lock
Power

MATRIX LAYOUT

Back

Front

1 LCD Display
This is a two-line, sixteen-character display that shows status information and is also used to manage display / source routing.

2 Navigation Buttons
Used for routing and adjusting settings of the *8x8 Matrix for HDMI w/8 ELR-POL Outputs*. See the information beginning on page 15 for details on using these buttons.

3 Menu
Press this button to display routing, switching mode, and IP address information.

4 IR Sensor
Receives signals from the IR Remote Control.

5 Lock Indicator
This LED glows bright blue when the front panel is locked.

6 Lock Button
Pressing this button temporarily locks the front panel controls.

7 Power Indicator
This LED indicator will glow bright blue when the matrix is powered on. When the matrix is in standby mode, this LED indicator will glow bright red. The power switch, on the back of the matrix, must be switched to the the ON position in order for this LED indicator to function.

8 Power Button
Press this button to power-on and power-off the matrix.

Back

9 IP Control
Connect an Ethernet cable to this port to control the *8x8 Matrix for HDMI w/8 ELR-POL Outputs* using IP Control. See page 38 for more information on configuring the matrix for IP control.

10 RS-232
Connect an RS-232 cable from this DB-9 connector to the RS-232 control device. See page 37 for more information.

11 IR Out (All)
Connect an IR emitter to this jack (Gefen part no. EXT-2IREMIT).

12 IR In (All)
Connect a 3.5mm-to-3.5mm mini-mono cable between this IR jack and the Gefen PACS or Gefen Mini PACS. IR Emitters or IR Extenders will not function if connected to this jack.

13 USB
Service port for manufacturer use only.

14 IR Out (A - H)
Connect an IR Emitter (Gefen part no. EXT-2IREMIT) cable from each of these jacks and each source device.

15 IR In (A - H)
Connect a 3.5mm-to-3.5mm mini-mono cable between each of these IR jacks and the Gefen PACS or Gefen Mini PACS. IR Emitters or IR Extenders will not function if connected to this jack.

16 ELR-POL Outputs (A - H)
Connect a CAT-5e (or better) cable from each of these jacks to the ELR-POL In jacks on the ELR-POL Receiver units.

17 HDMI Inputs (1 - 8)
Connect a Hi-Def source to each of these ports using HDMI cables.

18 HDMI Locking Connector
Used to lock the HDMI cable in place.

19 Power Switch
Turn the power ON or OFF using this switch.

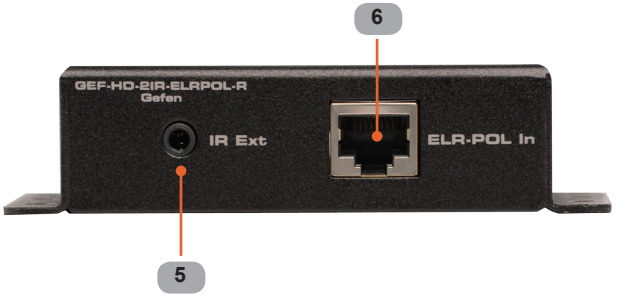
20 110/220 AC Power Receptacle
Connect the included AC power cord to this receptacle and connect the plug to an available electrical outlet.

ELR-POL RECEIVER LAYOUT

Top

Front

Back



ELR-POL RECEIVER DESCRIPTIONS

Top / Front / Back

1 ***Power Indicator***
This LED indicator will glow bright blue when the matrix is powered and the ELR-POL Receiver unit is connected to the matrix using CAT-5e (or better) cable.

2 ***HDMI Out***
Connect an HDTV display to the HDMI Out port using an HDMI cable.

3 ***HDMI Locking Connector***
Used to lock the HDMI cable in place.

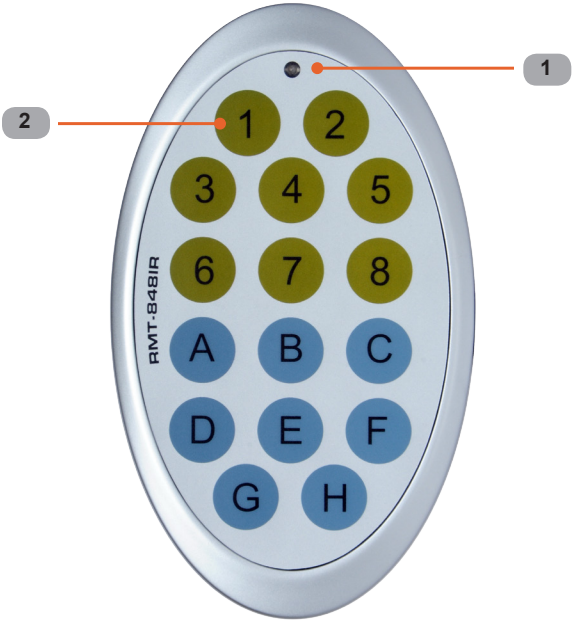
4 ***IR Out***
Connect an IR Emitter (Gefen part no. EXT-2IREMIT) cable from this jack to the HDTV display.

5 ***IR Ext***
Connect an IR Extender (Gefen part no. EXT-RMT-EXTIRC or EXT-RMT-EXTIRN) cable to this jack.

WARNING: *Do not* connect the Gefen PACS or Mini PACS to the IR Ext jack on the ELR-POL Receiver unit. Doing so will cause fatal damage to the power supply for the PACS / Mini PACS.

6 ***ELR-POL In***
Connect a CAT-5e (or better) cable from this jack to one of the ELR-POL jacks on the *8x8 Matrix for HDMI w/8 ELR-POL Outputs*.

Layout and Description (RMT-848IR)



1 ***LED Button Press Indicator***
This LED will be activated momentarily each time a button is pressed.

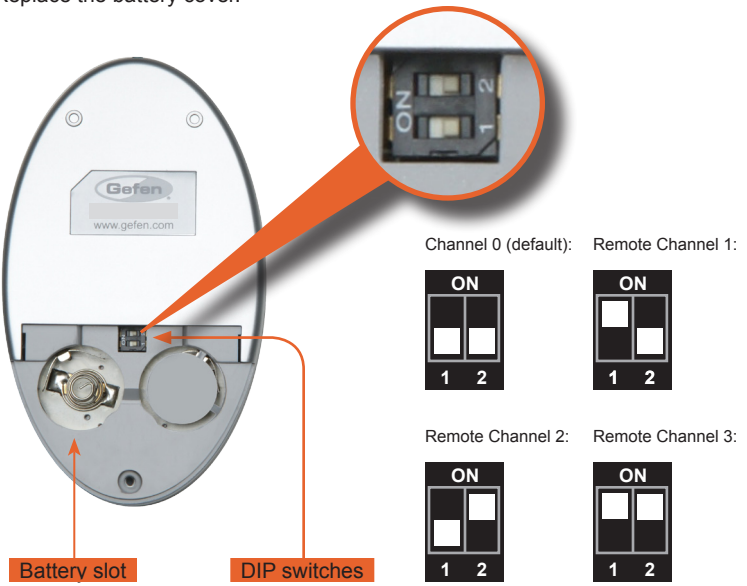
2 ***Display and Source Selection Buttons***
These buttons are used to select which source is routed to a display. The Source and Display buttons are mapped as follows:

NOTE: An Activity Indicator that flashes quickly while holding down any one of the 16 buttons indicates a low battery. Replace the IR Remote Control battery as soon as possible.

Installing the Battery

The Remote Control unit ships with two batteries (CR2032 lithium battery). One battery is required for operation and the other battery is a spare.

1. Remove the battery cover on the back of the IR Remote Control unit.
2. Insert the included battery into the open battery slot. The positive (+) side of the battery should be facing up.
3. Replace the battery cover.



Setting the IR Channel

The IR channel on the IR Remote Control must match the IR channel used by the *8x8 Matrix for HDMI*. For example, if both DIP switches on the IR Remote Control unit are set to IR channel 0 (both DIP switches down), then the *8x8 Matrix for HDMI* must also be set to IR channel 0. See pages 23 and 89 for information on how to change the IR channel on the *8x8 Matrix for HDMI*.

WARNING: Risk of explosion if battery is replaced by an incorrect type. Use only 3V lithium batteries CR-2032.

How to Connect the 8x8 Matrix for HDMI w/8 ELR-POL Outputs

1. Connect up to eight Hi-Def sources to the *8x8 Matrix for HDMI w/8 ELR-POL Outputs* using HDMI cables.

2. Connect up to eight HDTV displays to the supplied ELR-POL Receiver units using HDMI cables.

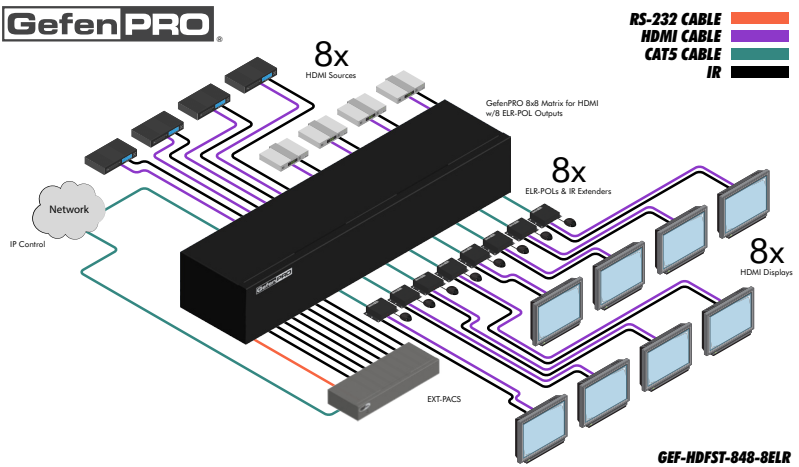
3. Connect each ELR-POL Receiver unit to the *8x8 Matrix for HDMI w/8 ELR-POL Outputs* using CAT-5e (or better) cables.

> **NOTE:** When connected to the matrix, each ELR-POL Receiver unit is powered over the CAT-5e cable. No external power supplies are required for the ELR-POL Receiver units.

4. IR Control: For details on using the Bi-directional IR feature on the matrix, see page 27.

5. Connect the AC power cord to the matrix and connect the plug to an available electrical outlet.

Wiring Diagram for the 8x8 Matrix for HDMI w/8 ELR-POL Outputs



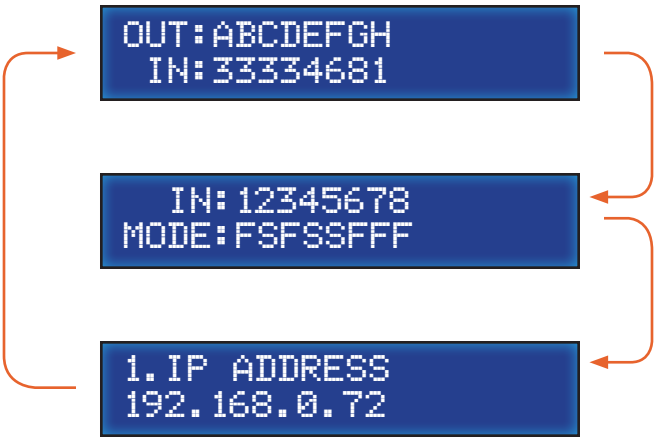
Main Display

The **Main Display** of the *8x8 Matrix for HDMI w/8 ELR-POL Outputs* is a 16 character 2 line display. This display shows the current routing status of the matrix and is also used to display additional system information. When the unit is powered on, the following screen is displayed:

After a few moments, the status screen is displayed. The status screen is shown below:

Displaying Additional Information

Consecutively pressing the **Menu** button, on the front panel, will cycle through other screens such as FST mode and IP information:



Determining the Current Routing State

In the example below, the first row (OUT) represents each HDMI output on the matrix. The bottom row (IN) represents each HDMI input on the matrix. Together, these two rows display the current routing state.

Starting on the bottom row, we can see that Input 3 has been routed to Outputs A, B, C, and D. Continuing on, Input 4 is routed to Output E, Input 6 is routed to Output F, Input 8 is routed to Output G, and finally Input 1 is routed to Output H.

Note that each output (A - H) specified in the LCD display, corresponds to each of the HDMI inputs (1 - 8) on the matrix.

If all inputs are routed to their respective outputs, the front-panel display will appear as follows:

This is referred to as a “1-to-1” routing state. This is the factory (default) setting for the *8x8 Matrix for HDMI*.

Routing Sources

Selecting the Output

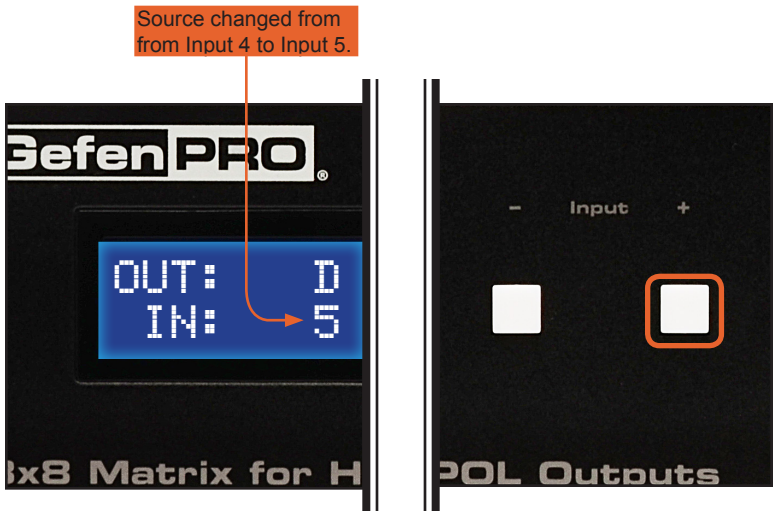
1. To select the output, press the **Out -** or **Out +** button once. The routing state for Output A will be displayed.

2. Press the **Out -** or **Out +** button to cycle through the routing state for each output. Consecutively pressing the **Out +** button will cycle through each output, from left to right.

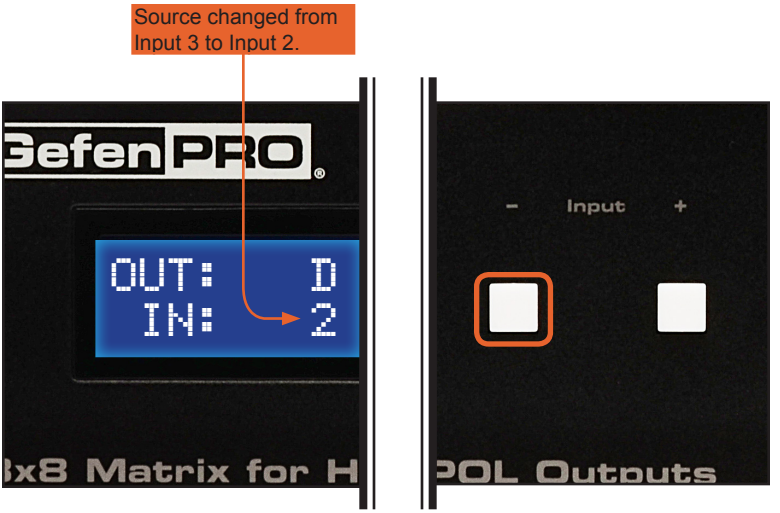
3. Consecutively pressing the **Out -** button will cycle through each output, from right to left.

Changing the Source

4. Once the desired output has been selected, press the **Input +** or **Input -** button. Consecutively pressing the **Input +** button will increment the input value by a factor of 1 (within a range of 1 - 8). For example, if Input 4 was originally routed to Output D, then pressing the **Input +** button will route Input 5 to Output D.



5. Consecutively pressing the **Input -** button will decrease the input value by a factor of 1 (within a range of 1 - 8). For example, if Input 3 was originally routed to Output D, pressing the **Input -** button will route Input 2 to Output D.



To change the routing status of another output, press the **Output +** or **Output -** buttons to navigate to the desired output. Use the **Input +** or **Input -** buttons to change the source.

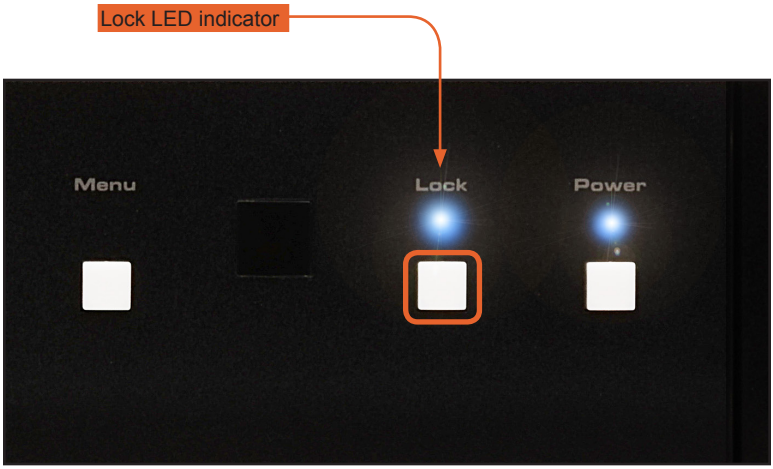
6. Press the **Menu** button to return to the Routing Screen.

NOTE: If the Menu button is not pressed after a routing change has been made, then the *8x8 Matrix for HDMI* will automatically return to the Routing Screen after about 20 seconds.

Locking / Unlocking the Front Panel

To prevent an accidental routing change or power-down (by pressing the **Power** button), the front-panel buttons on the *8x8 Matrix for HDMI w/8 ELR-POL Outputs* can be locked. Locking the matrix also disables many RS-232 / Telnet commands.

1. Press the **Lock** button on the front-panel:



The Lock LED will glow bright orange to indicate that the front-panel buttons on the *8x8 Matrix for HDMI w/8 ELR-POL Outputs* have been locked.

If any buttons (other than the **Lock** button) are pressed while the The *8x8 Matrix for HDMI* is Locked, the following message will be displayed:

2. To unlock the *8x8 Matrix for HDMI w/8 ELR-POL Outputs*, press the **Lock** button a second time.

Fast Switching Technology

Fast Switching Technology (FST) is a Gefen software implementation for HDMI products. FST was created to improve the lengthy HDMI authentication process, based on the HDMI and HDCP specifications.

FST provides quicker audio/video source switching and greatly improves the overall audio/video system behavior and performance when more than one HDTV display is used in the system setup.

FST allows connecting / disconnecting or turning ON / OFF of HDTV displays without having these activities affect other Hi-Def sources routed to any other HDTV display in the same system.

Fast Mode:

Setting the *8x8 Matrix for HDMI* to **Fast Mode** will improve performance when connecting / disconnecting Hi-Def sources, and powering ON / OFF HDTV displays.

NOTE: When switching from **Slow Mode** to **Fast Mode**, the HDTV displays connected to the Matrix will blink momentarily.

Slow Mode:

When set to **Slow Mode**, the Matrix will follow the standard authentication process, based on the HDMI and HDCP specifications. **Slow Mode** is recommended when the source does not support multiple devices.

Determining the Current Switching Mode

Each HDMI input can be set to **Fast Mode** or **Slow Mode**. It is recommended that each HDMI input be set to **Fast Mode** for best performance.

1. Consecutively press the **Menu** button on the front panel until the switching modes screen is displayed.

   The first row (IN) represents each HDMI input on the matrix. The bottom row (MODE) represents the current switching mode of each HDMI input.

Selecting the Input

2. To change the switching mode on an HDMI input, press the **Output -** (or **Output +**) button once. The switching mode for Input 1 will be displayed:

The letter **F** indicates that the HDMI input is using Fast Mode switching. If the HDMI input is set to Slow Mode switching, a letter **S** will be displayed under the input.

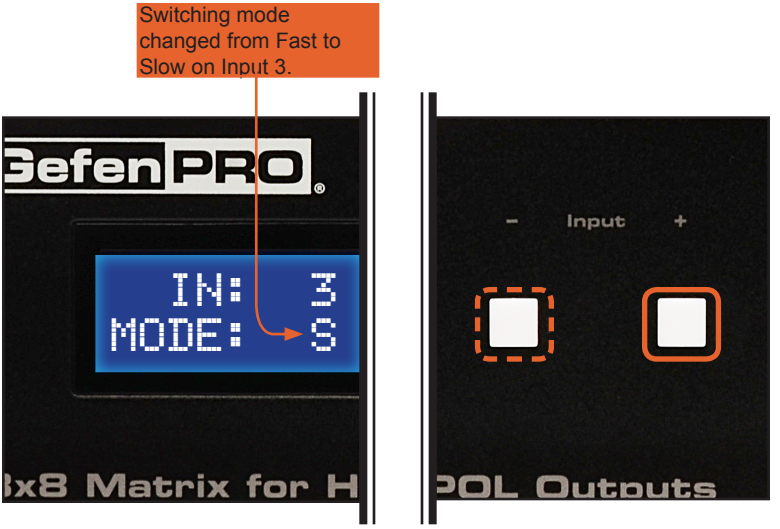
3. Press the **Output -** or **Output +** button again to cycle through the routing state for each output. Consecutively pressing the **Output +** button will cycle through each input, from left to right, starting with Input 1:

> **NOTE:** In Routing mode, the **Output +** and **Output -** buttons cycle through each *output*. In Switching mode, these same buttons are used to cycle through each *input*.

4. Consecutively pressing the **Output -** button will cycle through each output, from right to left:

Changing the Switching Mode

5. Once the desired input has been selected, press the **Input +** or **Input -** button to toggle between Fast or Slow switching mode.



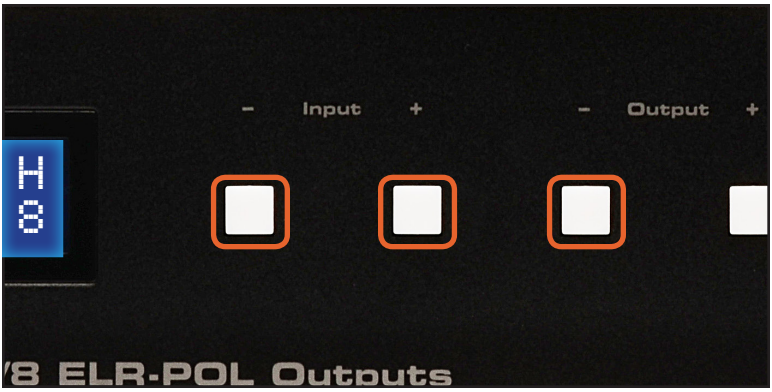
To change the switching mode of another input, press the **Output +** or **Output -** button to navigate to the desired input. Press the **Input +** or **Input -** button to toggle the switching mode between Fast (F) or Slow (S).

6. Press the **Menu** button to return to the Switching mode Screen.

Setting the IR Channel on the 8x8 Matrix for HDMI

In order for the *8x8 Matrix for HDMI* to communicate with the included IR Remote Control, both the matrix and the IR Remote Control must be set to the same IR channel. Follow the procedure outlined below to set the IR channel on the *8x8 Matrix for HDMI*.

1. From the Routing screen, simultaneously press the **Input -**, **Input +**, and the **Output -** buttons to display the IR address screen. The current IR address will be displayed along with the DIP switch settings for the IR remote control:



2. Use the **Input +** (or **Input -**) button to change the IR channel. Press the **Input -** button to decrease the IR channel value. Press the **Input +** button to increase the IR channel value.

3. After setting the IR address, make sure that the DIP switches on the IR Remote Control are set according to the information in the LCD display. See page 11 for information on setting the IR channel for the IR Remote Control unit.

In this case, the *8x8 Matrix for HDMI* is set to IR channel 1. Therefore, DIP switch 1 on the IR Remote Control must be set to the ON position and DIP switch 2 must be set to the OFF position.

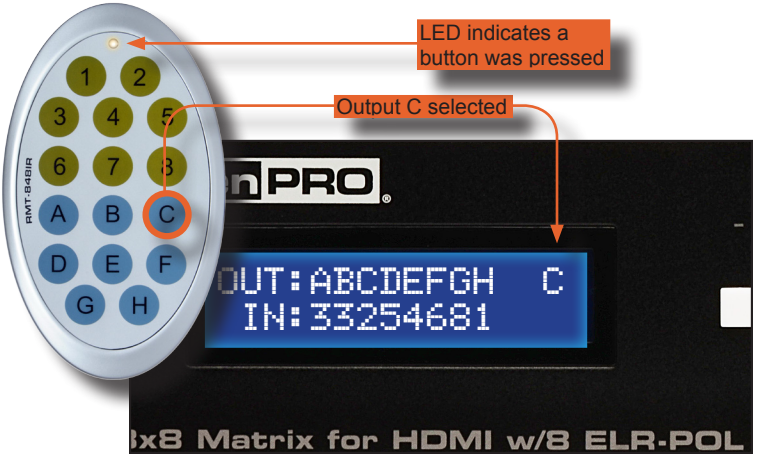
4. Press the **Menu** button to return to the Routing screen.

Routing Sources using the IR Remote Control

Buttons **1 - 8** on the IR remote control correspond to each HDMI input (Input 1 - 8) on the Matrix. Buttons **A - H** correspond to each HDMI output (Output A - H). To route a source to a display, press the desired output first, then press the input.

Routing Example: Route Input 4 to Output C

1. Select Output C by pressing button **C** on the IR Remote Control. The number 3 will appear in the upper right-hand corner of the LCD display:


LED indicates a button was pressed
Output C selected
1 2 3 4 5 6 7 8 A B C D E F G H
OUT:ABCDEFGH C
IN:33254681
8x8 Matrix for HDMI w/8 ELR-POL

2. Select Input 4 by pressing button **4** on the IR Remote Control. The number 4 will appear in the lower right-hand corner of the LCD display:

3. After the input and output have been selected on the IR Remote Control, the numbers on the far right-hand of the LCD display will disappear and the new routing state will be displayed in the LCD display:

Bi-Directional IR

The Bi-Directional IR feature, when used with optional GEF-HDFST-8IRKIT*, allows two simultaneous methods of control:

Control of the source device / matrix and control of the display.

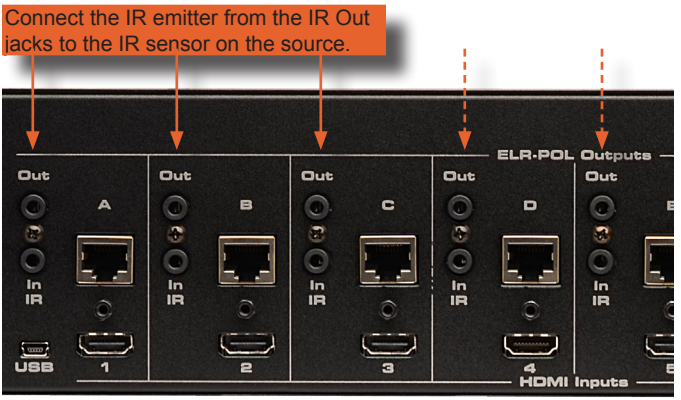
It is possible to control each source device from the viewing location when first connecting an IR Extender to each Receiver unit. The displays can be controlled by connecting a PACS/Mini PACS to the matrix.

Controlling the Source and Matrix

In the example below, we will be setting up IR control for both the matrix and source devices. Up to eight source devices can be controlled from the viewing location. The following illustrations assume all A/V devices have already been connected. See page 12 for details.

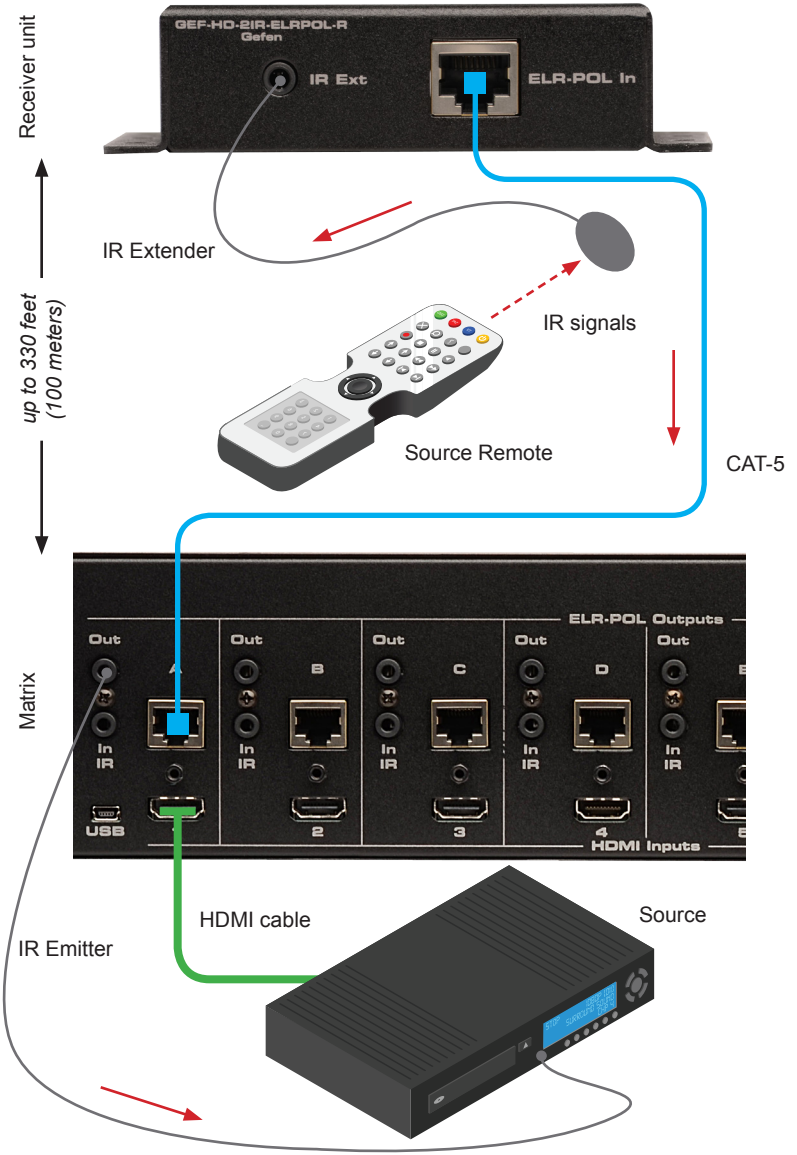
1. Connect an IR Extender to the **IR Ext. jack** on each Receiver unit. Each of the Receiver units should already be connected to their respective CAT-5 outputs on the matrix.

2. Connect an IR Emitter from each of the corresponding outputs on the matrix to to the IR sensor window of each respective display (e.g. Receiver A = Display A, Receiver B = Display B, etc).



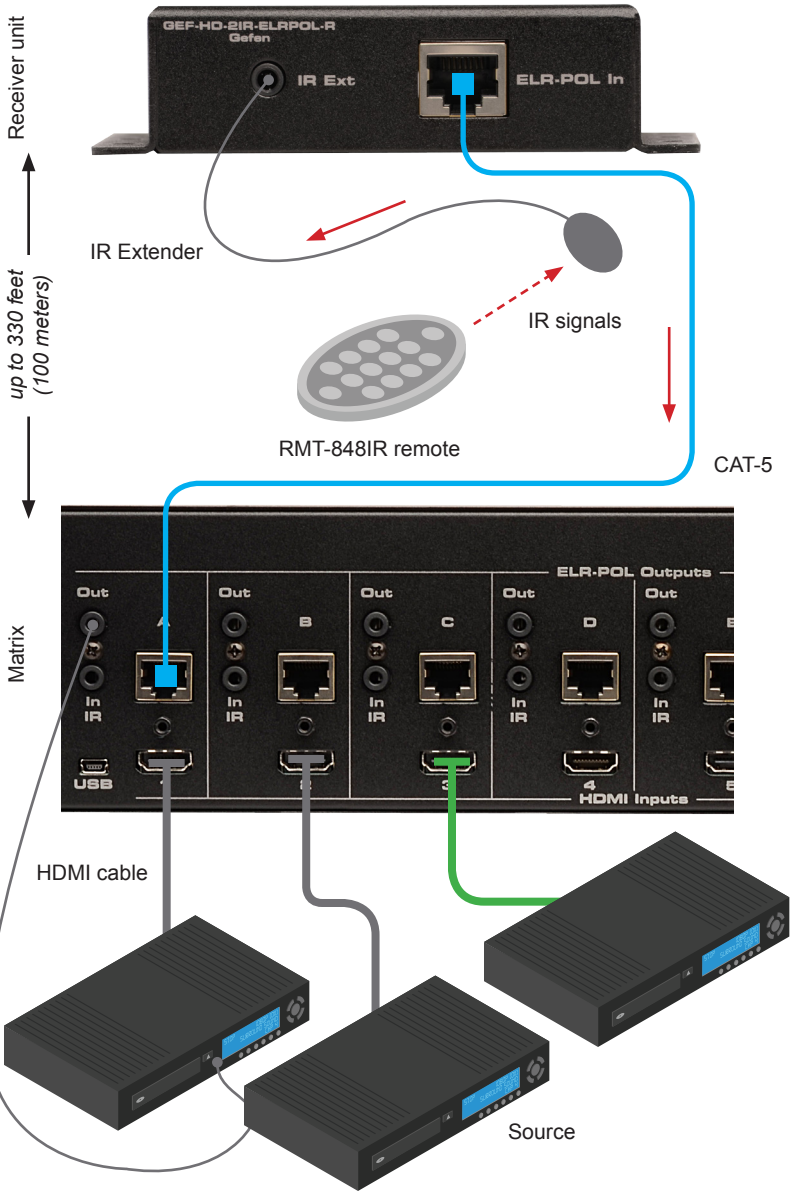
3. Refer to page 12 and make sure all remaining connections are made between the matrix and all source and display devices.

   To control a specific source device, point the source's IR remote control at the associated IR Extender. The illustration below shows how the source, connected to **HDMI In 1,** is controlled from the Receiver unit. IR signals are transmitted over the CAT-5 cable to the matrix.



OPERATING THE 8X8 MATRIX FOR HDMI

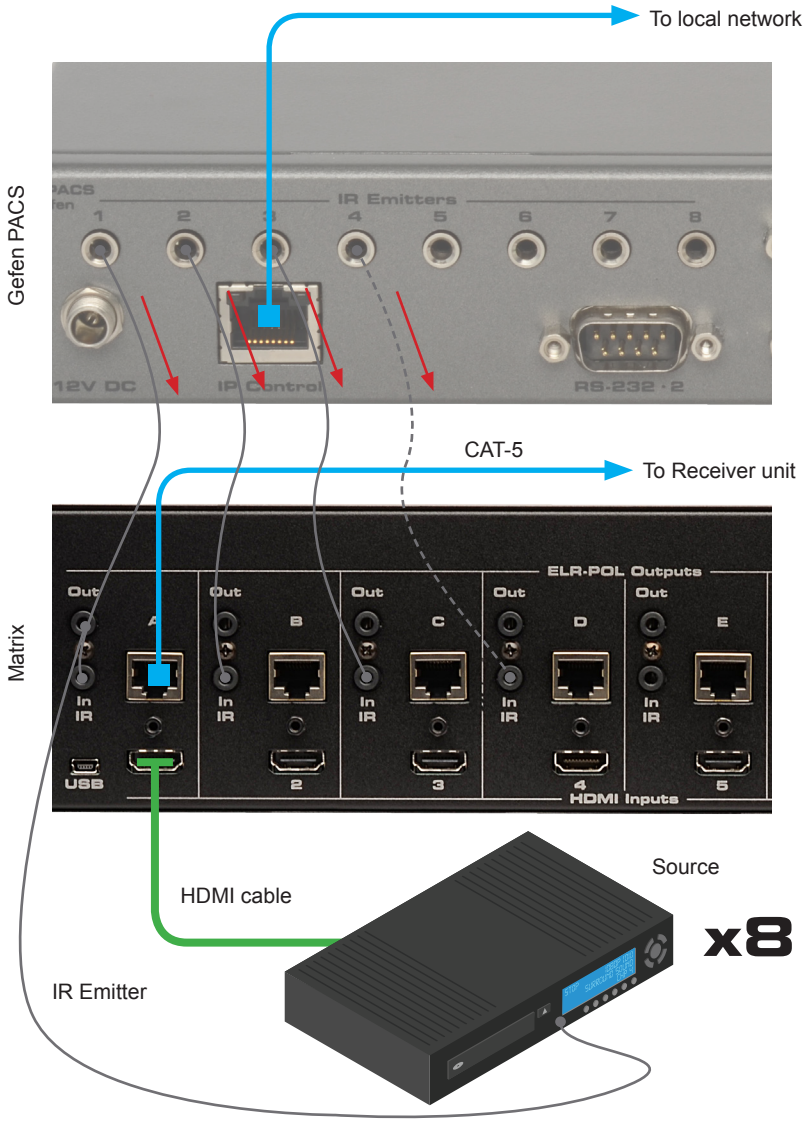
Matrix switching can also be controlled by using the same setup. Use the included IR remote control (Gefen part no. RMT-848IR) to switch between sources. In the example below, the source connected to **HDMI Input 3** has been routed to the Receiver unit connected to **Out 1**. See page 25 for details on routing sources using the included IR remote control.



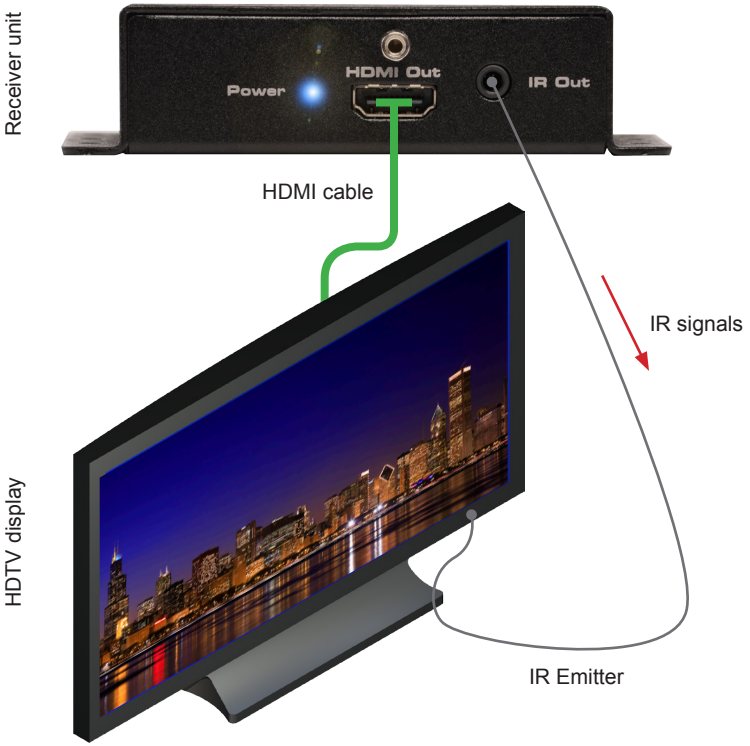
Controlling the Display

Displays can also be controlled by connecting the Gefen PACS (or Mini PACS) to the matrix.

1. Connect up to eight 3.5mm-to-3.5mm mini-mono cables from the IR Emitter outputs on the Gefen PACS (or Mini PACS) to the respective **IR In** ports on the matrix. The red arrows indicate IR signals from the PACS / Mini PACS.



2. Connect an IR Emitter from each **IR Out jack**, on the Receiver unit, to the IR sensor on the HDTV display.



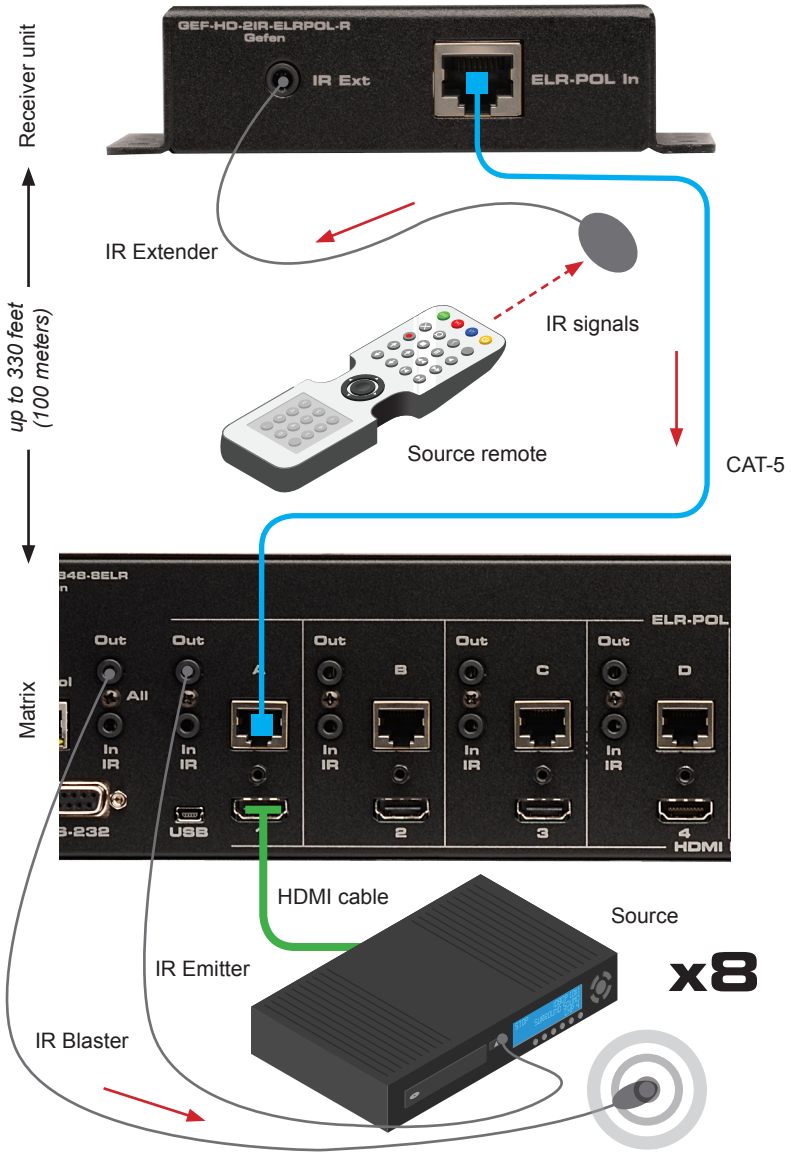
Each display can now receive IR commands from the PACS or Mini PACS.

Refer to the PACS or Mini PACS User Manual for more information on using IR commands.

IR Broadcasting to Sources

In addition to sending IR commands to a single source, the *8x8 Matrix for HDMI* also allows IR commands to be broadcast to all source devices.

1. Connect an IR Extender to the **IR Ext. jack** on each Receiver unit. Each of the Receiver units should already be connected to their respective CAT-5 outputs on the matrix.



In the illustration on the opposite page, the source remote is being used to send IR commands to the source device. The IR Blaster will broadcast the IR command(s) to all source devices in the room (or within the range of the IR Blaster).

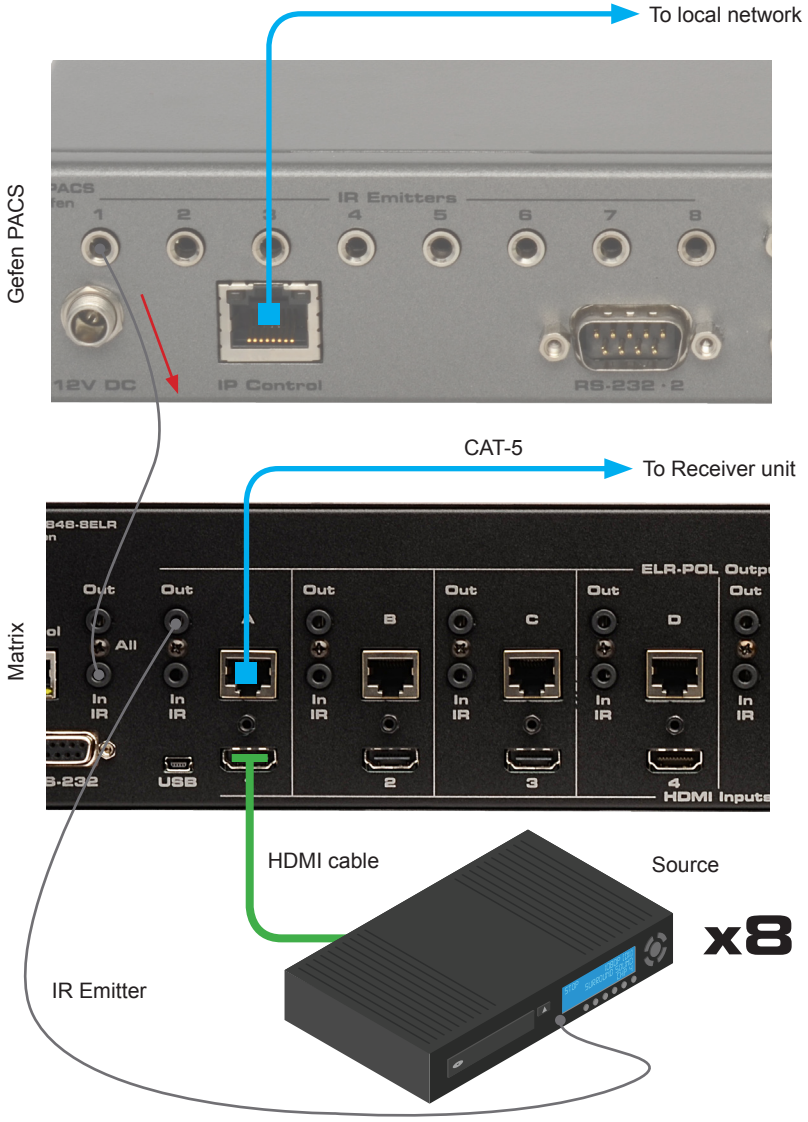
This feature has many useful applications. For example, let's say we have four Sony Blu-ray players connected and we want to send a "play" command to these source devices. Although it is possible that we may have other sources (e.g. gaming consoles, media centers, etc) connected to the matrix, it should be noted that only the Sony Blu-ray players will acknowledge the "play" command, sent from the IR Blaster.

IR Emitters can still be connected to each individual source device for discrete control. However, if an IR Blaster is present, the IR commands will be broadcast independent of the current routing state.

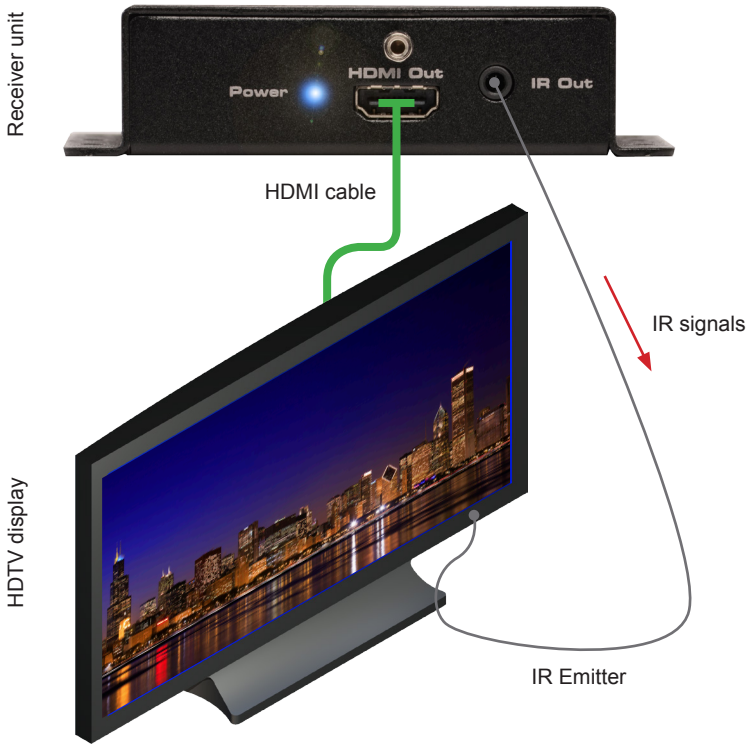
IR Broadcasting to Displays

In addition to sending IR commands to a single display, the *8x8 Matrix for HDMI* also allows IR commands to be broadcast to all displays devices.

1. Connect a 3.5mm-to-3.5mm mini-mono cable from one of the IR Emitter outputs on the Gefen PACS to the IR In All port on the matrix.



2. Connect an IR Emitter from each **IR Out jack**, on the Receiver unit, to the IR sensor on the HDTV display.



When an IR command is sent from the Gefen PACS / Mini PACS, the command will be sent to every Receiver unit that is connected to the matrix. This operation occurs independently of the current routing status.

This feature has many applications. For example, let's say we have a setup that uses three Panasonic displays and four Sony displays. If we send a "power off" command from the PACS for the Sony displays, then all Receiver units will receive the command but only the Sony displays will acknowledge the "power off" command.

External EDID Management

The *8x8 Matrix for HDMI* features EDID Management. Before the source can send video or audio signals, the source device reads the EDID (Extended Display Identification Data) from the output devices connected to the Splitter. The EDID contains information about what type of audio/video data that the source can send to each output device.

The *8x8 Matrix for HDMI* routes multiple sources to multiple output devices. This involves reading EDID data from more than one device. Management of the EDID data is important to maintain compatibility between all devices.

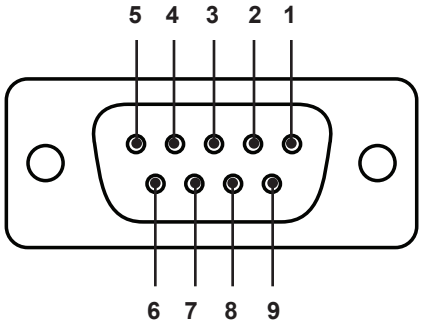
The following EDID features are copied from Output A:

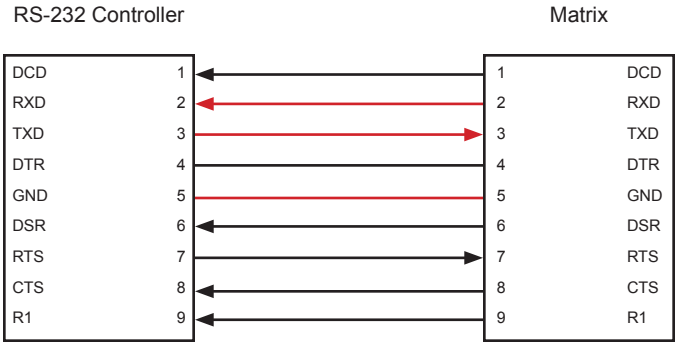
- Supported Resolutions
- 3D Support
- Audio Features

Display Connections:

- If a device is not connected to Output A, then no EDID changes are made, meaning that the previous EDID information will be used. This state will be in effect until a display is connected to Output A and the Matrix is power-cycled.
- EDID is built from Output A to the Input. The audio block will be copied from Output A. EDID-copying is performed only when the Matrix is reset or power-cycled.

RS-232 Interface





Only TXD, RXD, and GND are used.

RS232 Settings

Baud rate 19200
Data bits 8
Parity bits ..... None
Stop bits 1
Flow Control ..... None

IMPORTANT: When sending RS-232 commands, a carriage return must be included at the end of the command. A space *must* be included between the command and the parameter.

IP Configuration

The *8x8 Crosspoint Matrix for HDMI* supports IP-based control using Telnet, UDP, or the built-in Web-based GUI. To set up IP control, the network settings must be configured via RS-232. The default network settings for the matrix are as follows:

IP Address:	192.168.1.72	UDP IP Address:	192.168.1.80
Subnet:	255.255.255.0	UDP Port:	50008
Gateway:	192.168.1.254	UDP Remote Port:	50007
HTTP Port:	80		
Telnet Port:	23		

1. Connect an RS-232 cable from the PC to the matrix. Also make sure to connect an Ethernet cable between the LAN and the matrix.

2. Launch a terminal emulation program (e.g. HyperTerminal) and use the RS-232 settings listed on page 37.

> **NOTE:** Depending upon the network, all related IP, Telnet, and UDP settings will need to be assigned. Consult your network administrator to obtain the proper settings.

3. Set the IP address for the matrix using the `#sipadd` command (see page 53 for details).

4. Set the subnet mask using the `#snetmask` command (see page 54 for details).

5. Set the gateway (router) IP address using the `#sgateway` command (see page 48 for details).

6. Set the Telnet listening port using the `#set_telnet_port` command (see page 45 for details).

7. Set the HTTP listening port using the `#set_http_port` command (see page 43 for details).

8. Power-cycle the matrix to reboot and complete all IP setting changes.

9. Type the IP address that was specified in step 3, in a web browser to access the Web GUI or use the same IP address to Telnet to the matrix.

UDP Configuration

1. Set the UDP remote IP address for the matrix using the `#set_udp_remote_ip` command (see page 57 for details).

2. Set the UDP listening port for the matrix using the `#set_udp_port` command (see page 58 for details).

3. Set the UDP remote port for the matrix using the `#set_udp_remote_port` command (see page 59 for details).

IP / Telnet Configuration

Command	Description
#display_telnet_welcome	Set Telnet welcome message on login
#ipconfig	Displays all TCP/IP settings
#resetip	Resets IP configuration to factory settings
#set_http_port	Sets the Web server listening port
#set_telnet_pass	Prompts for password when using Telnet
#set_telnet_port	Sets the Telnet listening port
#set_webui_ad_pass	Sets the Web UI administrator password
#set_webui_op_pass	Sets the Web UI operator password
#sgateway	Sets the IP gateway address
#show_gateway	Displays the gateway address
#show_http_port	Displays the HTTP listening port
#show_ip	Displays the IP address of the Matrix
#show_mac_addr	Displays the MAC address of the Matrix
#show_netmask	Displays the netmask address
#show_telnet_port	Displays the Telnet listening port
#show_telnet_username	Displays the Telnet user name
#show_ver_data	Displays the hardware / software version
#sipadd	Sets the IP address of the matrix
#snetmask	Sets the IP network mask
#use_telnet_pass	Use password during Telnet sessions

#display_telnet_welcome Command

The #display_telnet_welcome command sets (enables/disables) the Telnet welcome message on login.

Syntax:

```
#display_telnet_welcome param1
```

Parameters:

param1 State [0 ... 1]

State	Meaning
0	Do not display welcome message
1	Display welcome message

Example:

```
#display_telnet_welcome 1
#Telnet Welcome Screen is Enable

#display_telnet_welcome 0
#Telnet Welcome Screen is Disable
```

#ipconfig Command

The #ipconfig command displays the current TCP/IP settings for the matrix.

Syntax:

```
#ipconfig
```

Parameters:

None

Example:

```
#ipconfig

-------------- TCP/IP settings -------------


MAC add  = 00:1C:91:01:50:07
IP add   = 192.168.1.72
Net Mask = 255.255.255.0
Gateway  = 192.168.2.1
Web Server Port = 80
Telnet Server Port = 23
Telnet password at login is set to ON
Telnet welcome at login is set to ON
```

#resetip Command

The #resetip command resets all TCP/IP settings to factory defaults.

Syntax:

```
#resetip
```

Parameters:

None

Notes:
The matrix must be rebooted after executing this command.

Example:

```
#resetip
IP Configuration Was Reset To Factory Defaults.
```

After rebooting the matrix, the IP settings will be cleared. Running the `#ipconfig` command will display the updated information:

```
#ipconfig
IP: 192.168.1.72
SUBNET: 255.255.255.0
GATEWAY: 192.168.1.254
```

#set_http_port Command

The #set_http_port command sets the Web server listening port. The default port setting is 80. Also see the `#show_http_port` on page 49.

Syntax:

```
#set_http_port param1
```

Parameters:

param1	Port	[0 ... 65535]

Notes:
The matrix must be rebooted after executing this command.

Example:

```
#set_http_port 70
HTTP Communication Port 70 Is Set.  Please Reboot The Unit.
```

#set_telnet_pass Command

The #set_telnet_pass command sets the Telnet password. The maximum length of the password is 20 characters. The password is case-sensitive. The default Telnet password is `Admin`.

Syntax:

```
#set_telnet_pass param1
```

Parameters:

param1	Password

Notes:
The matrix must be rebooted after executing this command.

Example:

```
#set_telnet_pass OK_Corral
TELNET Interface Password Is Set.
```

#set_telnet_port Command

The #set_telnet_port command sets the Telnet listening port. The default port value is 23.

Syntax:

```
#set_telnet_port param1
```

Parameters:

param1	Port	[0 ... 65535]

Notes:
The matrix must be rebooted after executing this command.

Example:

```
#set_telnet_port 20
Telnet Communication Port 20 Is Set.  Please Reboot The Unit.
```

#set_webui_ad_pass Command

The #set_webui_pass command sets the Adminstrator password for the Web interface. The maximum length of the password is 8 characters.

Syntax:

```
#set_webui_ad_pass param1
```

Parameters:

param1	Password

Notes:
The matrix must be rebooted after executing this command.

Example:

```
#set_webui_ad_pass reindeer
Web UI Administrator Password Is Set.
```

#set_webui_op_pass Command

The #set_webui_pass command sets the Operator password for the Web interface. The maximum length of the password is 8 characters.

Syntax:

```
#set_webui_op_pass param1
```

Parameters:

param1	Password

Notes:
The matrix must be rebooted after executing this command.

Example:

```
#set_webui_op_pass reindeer
Web UI Operator Password Is Set.
```

#sgateway Command

The #sgateway sets the IP gateway (router) address. Dot-decimal notation must be used when specifying the IP address. The default Gateway IP address is `192.168.1.1`.

Syntax:

```
#sgateway param1
```

Parameters:

param1	IP gateway

Notes:
The matrix must be rebooted after executing this command.

Example:

```
#sgateway 192.168.2.1
GateWay Address 192.168.2.1 Is Set. Please Reboot The Unit.
```

#show_gateway Command

The #show_gateway command shows the current gateway address.

Syntax:

```
#show_gateway
```

Parameters:

None

Example:

```
#show_gateway
GATEWAY ADDRESS IS: 192.168.2.1
```

#show_http_port Command

The #show_http_port command shows the current HTTP listening port.

Syntax:

```
#show_http_port
```

Parameters:

None

Example:

```
#show_http_port
HTTP COMMUNICATION PORT IS: 80
```

#show_ip Command

The #show_ip command shows the current IP address of the Matrix.

Syntax:

```
#show_ip
```

Parameters:

None

Example:

```
#show_ip
IP ADDRESS IS: 192.168.1.72
```

#show_mac_addr Command

The #show_mac_addr command shows the MAC address of the Matrix.

Syntax:

```
#show_mac_addr
```

Parameters:

None

Example:

```
#show_mac_addr
MAC ADDRESS IS: 00-12-0e-f1-7a-ea
```

#show_netmask Command

The #show_netmask shows the netmask address.

Syntax:

```
#show_netmask
```

Parameters:

None

Example:

```
#show_netmask
NET MASK ADDRESS IS: 255.255.255.0
```

#show_telnet_port Command

The #show_telnet_port command shows the current Telnet listening port.

Syntax:

```
#show_telnet_port
```

Parameters:

None

Example:

```
#show_telnet_port
TELNET COMMUNICATION PORT IS: 23
```

#show_telnet_username Command

The #show_telnet_username command returns the user name required for login.

Syntax:

```
#show_telnet_username
```

Parameters:

None

Example:

```
#show_telnet_username
User Name For TELNET Is : Admin
```

#show_ver_data Command

The #show_ver_data command displays the current hardware and firmware version.

Syntax:

```
#show_ver_data
```

Parameters:

None

Example:

```
#show_ver_data
SOFTWARE AND HARDWARE VERSION: v3.1A PCB-1707*B
```

#sipadd Command

The #sipadd command sets the IP address of the matrix. Dot-decimal notation must be used when specifying the IP address.

Syntax:

```
#sipadd param1
```

Parameters:

param1	IP address

Notes:
The matrix must be rebooted after executing this command.

Example:

```
#sipadd 192.168.1.238
IP Address 192.168.2.238 Is Set. Please Reboot The Unit.
```

#snetmask Command

The #snetmask command sets the IP network subnet mask. Dot-decimal notation must be used when specifying the IP network mask. The default subnet mask is: `255.255.255.0`

Syntax:

```
#snetmask param1
```

Parameters:

param1	Subnet mask

Notes:
The matrix must be rebooted after executing this command.

Syntax:

```
#snetmask 255.255.0.0
NetMask Address 255.255.0.0 Is Set.  Please Reboot The Unit.
```

#use_telnet_pass Command

The #use_telnet_pass command requires or disables Telnet login credentials. The default setting is disabled (param1 = 0).

Syntax:

```
#use_telnet_pass param1
```

Parameters:

param1 State [0 ... 1]

Value	Meaning
0	Disable password
1	Enable (force) password

Example:

```
#use_telnet_pass 1
Telnet Interface Password Is Enable

#use_telnet_pass 0
Telnet Interface Password Is Disable
```

UDP Configuration

Command	Description
#set_udp_port	Sets the local UDP listening port
#set_udp_remote_ip	Sets the remote UDP IP address
#set_udp_remote_port	Sets the remote UDP port
#show_udp_port	Displays the current UDP port
#show_udp_remote_ip	Displays the current remote UPD IP address
#show_udp_remote_port	Displays the current UDP remote port
#use_udp_enable	Enables / disables UDP access

#set_udp_port Command

The #set_udp_port command sets the local UDP listening port. The default port value is 50008.

Syntax:

```
#set_udp_port param1
```

Parameters:

param1	Port	[1 ... 65535]

Notes:
The matrix must be rebooted after executing this command.

Example:

```
#set_udp_port 10
New UDP listening port set to: 10
```

#set_udp_remote_ip Command

The #set_udp_remote_ip command sets the remote UDP IP address. The default port value is 192.168.1.80.

Syntax:

```
#set_udp_remote_ip param1
```

Parameters:

param1	IP Address

Notes:
The matrix must be rebooted after executing this command.

Example:

```
#set_udp_remote_ip 192.168.1.20
REMOTE UDP IP ADDRESS 192.168.1.20 IS SET.
```

#set_udp_remote_port Command

The #set_udp_remote_port command sets the remote UDP port. The remote port 50007.

Syntax:

```
#set_udp_remote_port param1
```

Parameters:

param1	Port

Notes:
The matrix must be rebooted after executing this command.

Syntax:

```
#set_udp_remote_port 4096
REMOTE UDP COMMUNICATION PORT 4096 IS SET.
```

#show_udp_port Command

The #show_udp_port command displays the current UDP port.

Syntax:

```
#show_udp_port
```

Parameters:

None

Example:

```
#show_udp_port
UDP COMMUNICATION PORT IS: 1024
```

#show_udp_remote_ip Command

The #show_udp_remote_ip command displays the current remote UDP IP address.

Syntax:

```
#show_udp_remote_ip
```

Parameters:

None

Example:

```
#show_udp_remote_ip
REMOTE UDP IP ADDRESS IS: 192.168.5.50
```

#show_udp_remote_port Command

The #show_udp_remote_port command displays the current remote UDP port.

Syntax:

```
#show_udp_remote_port
```

Parameters:

None

Example:

```
#show_udp_remote_port
REMOTE UDP COMMUNICATION PORT IS: 4023
```

#use_udp_enable Command

The #use_udp_enable command enables / disables UDP. Default value is disabled.

Syntax:

```
#use_udp_enable param1
```

Parameters:

param1 State [0 ... 1]

Value	Meaning
0	Disable UDP
1	Enable UDP

Example:

```
#use_udp_enable 1
UDP ACCESS IS ENABLE
```

Routing / Naming / Presets

Command	Description
#lock_matrix	Locks / unlocks the Matrix
#recall_preset	Recalls a routing / mask preset
#save_preset	Saves the current routing/masking state to a preset
#set_bank_name	Sets the name of the specified EDID bank
#set_input_name	Specifies a name for an input
#set_output_name	Specifies a name for an output
#set_preset_name	Sets the name of the specified routing preset
#show_bank_name	Displays the specified EDID bank name
#show_input_name	Displays the specified input name
#show_output_name	Displays the specified output name
#show_preset_name	Displays the specified routing preset
#show_r	Displays the current routing state of the specified output
r	Routes the specified inputs to the specified outputs
s	Routes all outputs are routed to the specified input

#lock_matrix Command

The #lock_matrix command locks / unlocks the Matrix. When the Matrix is locked, all functions are disabled including the front panel, RS-232, and Telnet.

Syntax:

```
#lock_matrix param1
```

Parameters:

param1 Value [0 ... 1]

Value	Meaning
0	Unlock Matrix
1	Lock Matrix

Example:

```
#lock_matrix 1
MATRIX IS LOCKED

#lock_matrix 0
MATRIX IS UNLOCKED
```

#recall_preset Command

The #recall_preset command recalls a routing preset. Any masked outputs will also be recalled. The underscore character ("_") must be included when typing the command name.

Syntax:

```
#recall_preset param1
```

Parameters:

param1	Preset	[1 ... 8]

Example:

```
#recall_preset 1
RECALLED THE ROUTING STATE SAVES TO PRESET 1
```

#save_preset Command

The #save_preset command saves the current routing state to the specified preset. Any masked outputs will also be saved as part of the current routing state. The underscore character ("_") must be included when typing the command name.

Syntax:

```
#save_preset param1
```

Parameters:

param1	Preset	[1 ... 8]

Example:

```
#save_preset 1
CURRENT ROUTING STATE IS SAVED TO PRESET/INPUT 1
```

#set_bank_name Command

The #set_bank_name command names the specified bank. The bank name can be up to 8 characters in length. Special characters and spaces are not permitted. If needed, use the underscore character ("_") to separate characters.

Syntax:

```
#set_bank_name param1
```

Parameters:

param1	Bank	[1 ... 8]
param2	Name	

Example:

```
#set_bank_name 2 Dell_30
```

#set_input_name Command

The #set_input_name command provides a name to the selected input. For example, "Input 1" could be renamed as "DVD_Player". The maximum string length for *param2* is 15 characters. Special characters and spaces are not permitted. If needed, use the underscore character ("_") to separate characters.

Syntax:

```
#set_input_name param1 param2
```

Parameters:

param1	Input	[1 ... 8]
param2	Name	

Example:

```
#set_input_name 5 Blu_ray
Blu_ray NAME IS ASSIGNED TO INPUT 5
```

#set_output_name Command

The #set_output_name command provides a name to the selected output. For example, “Output 1” could be renamed as “HDDisplay”. The maximum string length for *param2* is 8 characters. Special characters and spaces are not permitted. If needed, use the underscore character (“_”) to separate characters.

Syntax:

```
#set_output_name param1 param2
```

Parameters:

param1	Output	[A ... H]
param2	Name	

Example:

```
#set_output_name C Sony_XBR7
Sony_XBR7 NAME IS ASSIGNED TO OUTPUT C
```

#set_preset_name Command

The #set_preset_name command names the specified preset. The preset name can be up to 8 characters in length. Special characters and spaces are not permitted. If needed, use the underscore character (“_”) to separate characters.

Syntax:

```
#set_preset_name param1 param2
```

Parameters:

param1	Preset	[1 ... 8]
param2	Name	

Example:

```
#set_preset_name 3 BluRayAmp
BluRayAmp NAME IS ASSIGNED TO PRESET 3
```

#show_bank_name Command

The #show_bank_name command displays the name of the specified bank.

Syntax:

```
#show_bank_name param1
```

Parameters:

param1	Bank	[1 ... 8]

Example:

```
#show_bank_name 2
THE NAME FOR BANK 2 IS: Dell_30
```

#show_input_name Command

The #show_input_name command displays the name for the specified input.

Syntax:

```
#show_input_name param1
```

Parameters:

param1	Input	[1 ... 8]

Example:

```
#show_input_name 5
THE NAME FOR INPUT 5 IS: Blu_ray
```

#show_output_name Command

The #show_output_name command shows the name provided to the specified input using the #set_output_name command.

Syntax:

```
#show_output_name param1
```

Parameters:

param1	Output	[A ... H]

Example:

```
#show_output_name C
THE NAME FOR OUTPUT C IS: Sony_XBR
```

#show_preset_name Command

The #show_preset_name command displays the name of the specified routing preset.

Syntax:

```
#show_preset_name param1
```

Parameters:

param1	Preset	[A ... H]

Example:

```
#show_preset_name 3
THE NAME FOR PRESET 3 IS: BluRayAmp
```

#show_r Command

The #show_r command shows the current routing status of the specified output. The name assigned to the output and input will be included in parentheses.

Syntax:

```
#show_r param1
```

Parameters:

param1	Output	[A ... H]

Example:

```
#show_r c
OUTPUT C(Sony_XBR) IS ROUTED TO INPUT 4 (INPUT4)
```

r Command

The r command routes the specified input to the specified outputs. If *param2* is set to 0, then the specified input is routed to all outputs. Unlike other commands, do not precede the r command with the "#' symbol.

Syntax:

```
r param1 param2[...param9]
```

Parameters:

param1	Input	[1 ... 8]
param2	Outputs	[A ... H]

Examples:

```
r 7 A C D F G H
INPUT 7 IS SET TO OUTPUTS A, C, D, F, G, H

r 2 0
INPUT 2 IS SET TO ALL OUTPUTS.
```

s Command

The s command routes the specified input to all outputs. Unlike other commands, do not precede the r command with the "#' symbol.

Syntax:

```
s param1
```

Parameters:

param1	Input	[1 ... 8]

Examples:

```
s 2
INPUT 2 IS SET TO ALL OUTPUTS.
```

Status

Command	Description
#help	Displays all available commands
#show_fw	Displays the Matrix firmware version
#show_hpd	Displays the HPD status of the specified output
#show_rsense	Displays the RSENSE status of the specified output
m	Displays the current matrix routing status in table format
n	Displays the routing status for the specified output

#help Command

The #help command displays help on the specified command. If *param1* is not specified, then the full list of commands is displayed.

Syntax:

```
#help [param1]
```

Parameters:

param1 Command name (optional)

Example:

```
#help #recall_preset
RECALL A ROUTING STATE PRESET
PARAM 1 = 1 - 8 (PRESET/INPUT)
```

#show_fw Command

The #show_fw command displays the current firmware version of the Matrix.

Syntax:

```
#show_fw
```

Parameters:

None

Example:

```
#show_fw
FIRMWARE VERSION = GEF-HDFST-848-8ELR v3.1G
```

#show_hdp Command

The #show_hpd command displays the HPD (Hot-Plug Detect) status of the specified output. The name assigned to the output will be included in parentheses.

Syntax:

```
#show_hpd param1
```

Parameters:

param1	Output	[A ... H]

Examples:

```
#show_hpd C
HPD OF OUTPUT C(Sony_XBR) IS HIGH

#show_hpd A
HPD OF OUTPUT A(OUTPUT1) IS LOW
```

#show_rsense Command

The #show_rsense command displays Rsense status of the specified output.

Syntax:

```
#show_rsense param1
```

Parameters:

param1	Output	[A ... H]

Notes:

If the output has been renamed using the #set_output_name command, then the name assigned to the output will be included in parentheses.

Examples:

```
#show_rsense A
RSENSE OF OUTPUT A(OUTPUT1) IS LOW

#show_rsense C
RSENSE OF OUTPUT C(Sony_XBR) IS HIGH
```

m Command

The m command displays the current matrix routing status in table format. Unlike other commands, do not precede the m command with the "#' symbol.

Syntax:

```
m
```

Parameters:

None

Example:

```
m
Out: A B C D E F G H
 In: 1 2 1 2 2 2 2 2

ALL OUTPUTS ARE UNMASKED
MATRIX IS UNLOCKED
```

n Command

The n command displays the current input-output routing state for the specified output. Unlike other commands, do not precede the n command with the "#' symbol.

Syntax:

```
n param1
```

Parameters:

param1	Output	[A ... H]

Notes:

If *param1* = 0, then the routing status for all outputs will be displayed.

Examples:

```
n A
A3

n 0
A1B2C1D2E2F2G2H2
```

FST

Command	Description
#fst_fast	Sets the specified inputs to Fast switching mode
#fst_slow	Sets the specified inputs to Slow switching mode
#show_fst	Displays the current switching mode for the specified input

#fst_fast Command

The #fst_fast command sets the specified inputs to Fast switching mode.

Syntax:

```
#fst_fast param1
```

Parameters:

param1	Input	[1 ... 8]

Notes:

If *param1* = 0, then all inputs will be set to Fast switching mode.

Example:

```
#fst_fast 1
INPUT 1 IS SET TO FST FAST MODE
```

NOTE: See page 19 for more information on the FST feature.

#fst_slow Command

The #fst_slow command sets the specified inputs to Slow switching mode.

Syntax:

```
#fst_slow param1
```

Parameters:

param1	Input	[1 ... 8]

Notes:

If *param1* = 0, then all inputs will be set to Slow switching mode.

Example:

```
#fst_slow 1
INPUT 1 IS SET TO FST SLOW MODE
```

#show_fst Command

The #fst_slow command sets the specified inputs to Slow switching mode.

Syntax:

```
#show_fst param1
```

Parameters:

param1	Input	[1 ... 8]

Notes:

If *param1* = 0, then the switching mode status for all inputs will be displayed.

Example:

```
#show_fst 1
INPUT 1(INPUT1) IS IN FAST SWITCHING MODE
```

Masking

Command	Description
#echo	Enables / disables RS-232 feedback
#fadefault	Resets the matrix to factory defaults
#hdcp	Disables HDCP on the specified input
#hpd_pulse	Cycles the HPD line on the specified input
#lock_edid	Locks the local EDID when powering the matrix
#mask	Masks the specified outputs
#power	Powers the matrix on or off
#reboot	Reboots the matrix
#set_edid	Copies EDID data between inputs, outputs, and banks
#set_ir	Sets the IR channel of the matrix
#show_hdcp	Displays the HDCP status on the specified input
#show_ir	Displays the current IR channel of the matrix
#show_mask	Displays the output masking status
#show_out_colordpt	Shows the highest color depth supported by the display based on the EDID
#show_out_res	Shows the highest resolution supported by the display based on the EDID
#unmask	Unmasks the selected outputs

#echo Command

The #echo command enables / disables serial port (terminal) echo.

Syntax:

```
#echo
```

Parameters:

param1 Value [0 ... 1]

Value	Meaning
0	Disable feedback
1	Enable feedback

Examples:

```
#echo 1
LOCAL ECHO IS ON

#echo 0
LOCAL ECHO IS OFF
```

#fadefault Command

The #fadefault command disables the EDID lock state, sets the default routing state (1-1, 2-2, 3-3, etc.), resets the input and output names to the default names (e.g. Output 1, Input 1), and resets the IP configuration to the default settings.

Syntax:

```
#fadefault
```

Parameters:

None

Syntax:

```
#fadefault
```

```
MATRIX WAS RESET TO FACTORY DEFAULTS
LOCAL ECHO IS ON
ALL OUTPUTS ARE UNMASKED
ALL INPUTS ARE SET TO FST FAST MODE
HTTP Communication Port 80 Is Set.
Telnet Communication Port 23 Is Set.
UDP Echo Server Communication Port 23 Is Set.
Remote UDP IP Address 192.168.5.50 Is Set.
Remote UDP Communication Port 4023 Is Set.
UDP Access is Enable
Telnet Interace Password Is Disable
TELNET User Name Admin Is Set.
TELNET Interface Password Is Set.
Telnet Welcome Screen Is Enable
Web UI Operator Password Is Set
Web UI Administrator Password Is Set
ALL INPUTS HDCP ENABLE.
INPUT NAME INIT....
OUTPUT NAME INIT....
CURRENT ROUTING STATE IS SAVED TO PRESET 1
CURRENT ROUTING STATE IS SAVED TO PRESET 2
CURRENT ROUTING STATE IS SAVED TO PRESET 3
CURRENT ROUTING STATE IS SAVED TO PRESET 4
CURRENT ROUTING STATE IS SAVED TO PRESET 5
CURRENT ROUTING STATE IS SAVED TO PRESET 6
CURRENT ROUTING STATE IS SAVED TO PRESET 7
CURRENT ROUTING STATE IS SAVED TO PRESET 8

BANK NAME INIT....
PRESET NAME INIT....

MATRIX WILL REBOOT SHORTLY *REBOOT UNIT IN 2 SECONDS
```

#hdcp Command

The #hdcp command disables HDCP detection on the selected input.

> **NOTE:** Some computers will enable HDCP if an HDCP-compliant display is detected. Set *param2 = 1* to force the computer to ignore detection of an HDCP-compliant display. Setting *param2 = 0* does ***not*** decrypt HDCP content.

Syntax:

```
#hdcp param1 param2
```

Parameters:

param1	Input	[1 ... 8]
param2	Value	[0 ... 1]

Value	Description
0	Disable
1	Enable

Examples:

```
#hdcp 2 0
INPUT 2 HDCP IS DISABLE

#hdcp 0 1
ALL INPUTS HDCP ARE ENABLE
```

#hpd_pulse Command

The #hpd_pulse command cycles the HPD line on the specified input. Issuing this command is identical to physically disconnecting and reconnecting the cable between the source and the matrix.

Syntax:

```
#hpd_pulse param1
```

Parameters:

param1	Input	[1 ... 8]

Notes:

Set *param1* = 0 to cycle the HPD line on all inputs.

Examples:

```
#hpd_pulse 1
HPD PULSE HAS BEEN SENT TO INPUT 1

#hpd_pulse 0
HPD PULSE HAS BEEN SENT TO ALL INPUTS
```

#lock_edid Command

The #lock_edid command secures the Local EDID by disabling the automatic loading of the downstream EDID after the matrix is powered.

Syntax:

```
#lock_edid param1
```

Parameters:

param1 Value [0 ... 1]

Value	Description
0	Disable
1	Enable

Examples:

```
#lock_edid 0
Disable Lock EDID mode
```

#mask Command

The #mask command masks the specified outputs. If *param1* is set to 0, then all outputs are masked.

Syntax:

```
#mask param1[...param9]
```

Parameters:

param1	Output	[A ... H]

Examples:

```
#mask c f
OUTPUTS C, F ARE MASKED

#mask 0
ALL OUTPUTS ARE MASKED
```

#power Command

The #power command toggles the power state on the matrix.

Syntax:

```
#power param1
```

Parameters:

param1 State [0 ... 1]

Value	Meaning
0	Power matrix OFF
1	Power matrix ON

Example:

```
#power 0
MATRIX IS OFF

#power 1
MATRIX IS ON
```

#reboot Command

The #reboot command reboots the matrix.

Syntax:

```
#reboot
```

Parameters:

None

Example:

```
#reboot

MATRIX WILL REBOOT SHORTLY *REBOOT UNIT IN 2 SECONDS
GEF-HDFST-848-8ELR v3.1G
A1B2C3D4E5F6G7H8
```

#set_edid Command

The #set_edid command sets the specified EDID type to an input or bank.

Syntax:

```
#set_edid param1 param2 param3 param4
```

Parameters:

param1 Source type [STRING]

String	Description
default	Uses default EDID
dynamic	Uses Dynamic EDID
bank	Uses EDID bank
output	Uses EDID on Output (sink)

param2 Source number [0 ... 8]

Value	Description
0	Default EDID
1 ... 8	EDID Bank
1 ... 8	Output

param3 Target type [STRING]

String	Description
input	Specifies an input
bank	Specifies an EDID bank

param2 Target number [1 ... 8, 1 ... 8]

Value	Description
1 ... 8	Input
1 ... 8	EDID Bank

(Continued on next page)

Notes:

If *param1* = default or *param1* = dynamic, set *param2* = 0.

Using Dynamic EDID

When *param1* = dynamic, the specified input will be set to *Dynamic EDID*. This can be observed by accessing the Manage EDID tab, in the Web interface (see page 108). When an input is set to *Dynamic EDID*, the input will use the EDID of the last selected output during the routing process. The order in which outputs are routed are important when using *Dynamic EDID*. See the example below.

Examples:

Using Dynamic EDID:

```
#set_edid dynamic 0 input 4
COPY DYNAMIC EDID TO INPUT4.
```

In the example above, Input 4 is set to *Dynamic EDID*. If the following routing command is issued, then the EDID from Output 3 will be used (not Output 2) by Input 1.

```
r 4 2 3
INPUT 4 IS SET TO OUTPUTS 2, 3
```

However, if we wanted to use the EDID from Output 2, we would write the command as:

```
r 4 3 2
INPUT 4 IS SET TO OUTPUTS 3, 2
```

Since Output 2 was the last output that was specified, this will be the EDID that Input 4 will use.

This second example does not use Dynamic EDID but uses the EDID from the specified downstream sink (display, etc):

```
#set_edid output 1 input 3
COPY OUTPUT1 EDID TO INPUT3.
```

#set_ir Command

The #set_ir set the IR channel for the matrix. The associated DIP switch settings for the IR remote control unit are returned. See page 11 for details on setting the IR channel for the IR remote control.

Syntax:

```
#set_ir param1
```

Parameters:

param1	Channel	[0 ... 3]

Example:

```
#set_ir 2
IR CHANNEL IS SET TO CHANNEL 2
```

#show_hdcp Command

The #show_hdcp command displays the HDCP status on the specified input

Syntax:

```
#show_hdcp param1
```

Parameters:

param1	Input	[1 ... 8]

Notes:

Set *param1* = 0 to displays the HDCP status of all inputs.

Examples:

```
#show_hdcp 3
INPUT 3 HDCP IS ENABLED


#show_hdcp 0
INPUT 1, 3, 4 HDCP ARE ENABLED
```

#show_ir Command

The #show_ir displays the current IR channel for the matrix.

Syntax:

```
#show_ir
```

Parameters:

None

Example:

```
#show_ir
CURRENT IR CHANNEL IS: 2
```

#show_mask Command

The #show_mask command shows the mask status for the specified output.

Syntax:

```
#show_mask param1
```

Parameters:

param1	Output	[A ... H]

Example:

```
#show_mask d
OUTPUT  IS UNMASKED

#show_mask c
OUTPUT C(Sony_XBR) IS MASKED
```

#show_out_colordpt Command

The #show_out_colordpt command displays the highest color depth supported by the specified display based on the EDID.

Syntax:

```
#show_out_colordpt param1
```

Parameters:

param1	Output	[A ... H]

Example:

```
#show_out_colordpt a
12 BITS HDMI
```

If no display (sink) signal is detected, then the #show_out_colordpt will return the following:

```
#show_out_colordpt a
NO SIGNAL
```

#show_out_res Command

The #show_out_res command displays the highest resolution supported by the specified display based on the EDID.

Syntax:

```
#show_out_res param1
```

Parameters:

param1	Output	[A ... H]

Example:

```
#show_out_res c
1080P 60HZ HDMI
```

If no display (sink) signal is detected, then the #show_out_colordpt will return the following:

```
#show_out_res c
NO SIGNAL
```

#unmask Command

The #unmask command unmasks the specified outputs. If *param1* is set to 0, then all outputs are unmasked.

Syntax:

```
#unmask param1[...param9]
```

Parameters:

param1	Output	[A ... H]

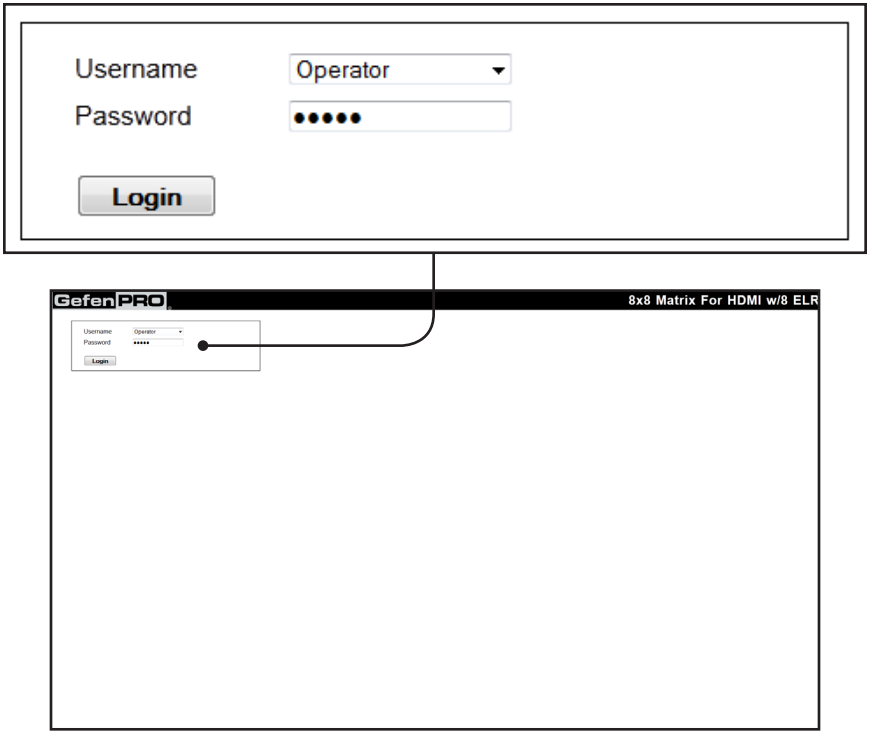
Examples:

```
#unmask d
OUTPUT F IS UNMASKED

#unmask 0
ALL OUTPUTS ARE UNMASKED
```

Using the Built-in Web server

Access the built-in Web server by entering the IP address of the matrix that was specified in step 3 on page 38. Once connected to the matrix, the login screen will be displayed.



Username
Select the username from the drop-down list.

Options:
`Operator, Administrator`

Administrator login provides unrestricted access to all features and settings. Operator login limits access to matrix routing, display information, and routing preset features.

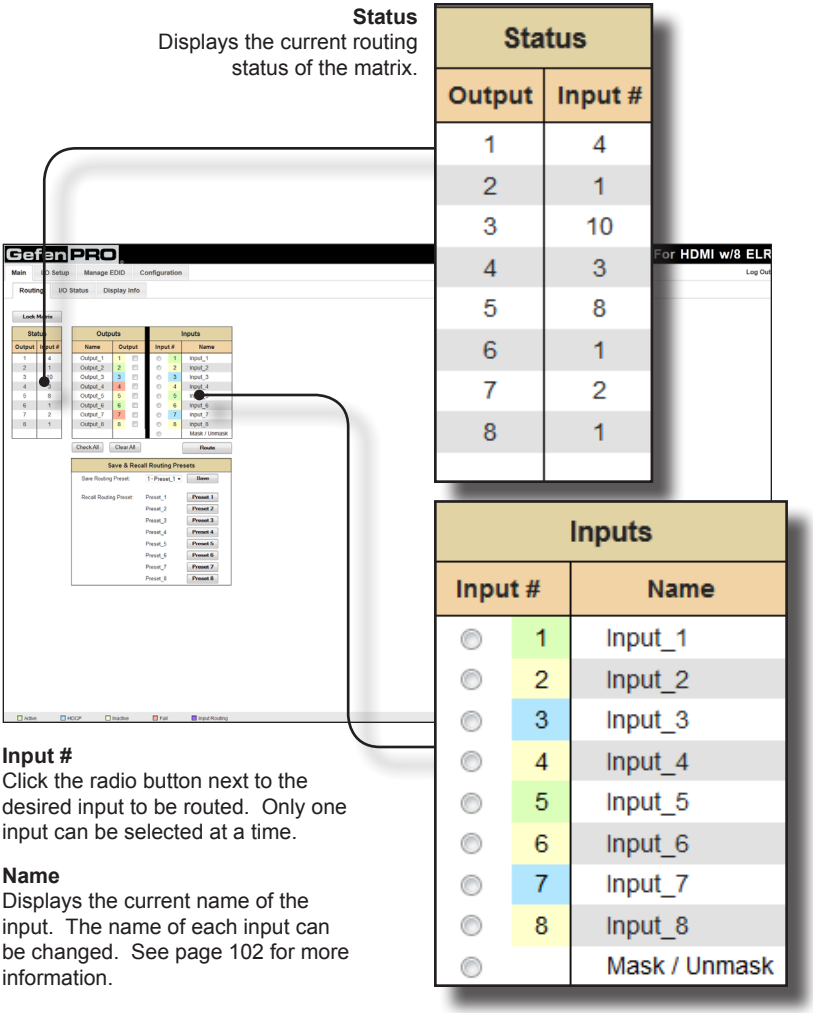
Password
Enter the password for the associated username. The password can be set using the `#set_webui_ad_pass` or `#set_webui_op_pass` commands. See page 46 and 47 for details on these commands. See page 115 for instructions on changing the password using the Web GUI.

The Web GUI is divided into four main pages: **Main**, **I/O Setup**, **Manage EDID**, and **Configuration**. Each main page is represented by a tab at the top-most portion of the screen. The **Main**, **I/O Setup**, and **Manage EDID** pages have their own set of sub-tabs. Click on the desired tab / sub-tab to open the desired page.

NOTE: In order to view all four tabs at the top of the screen, the user must be logged in as "Administrator". If logged-in as "Operator", only the **Main** tab will be visible.

Main >> Routing

Status
Displays the current routing status of the matrix.

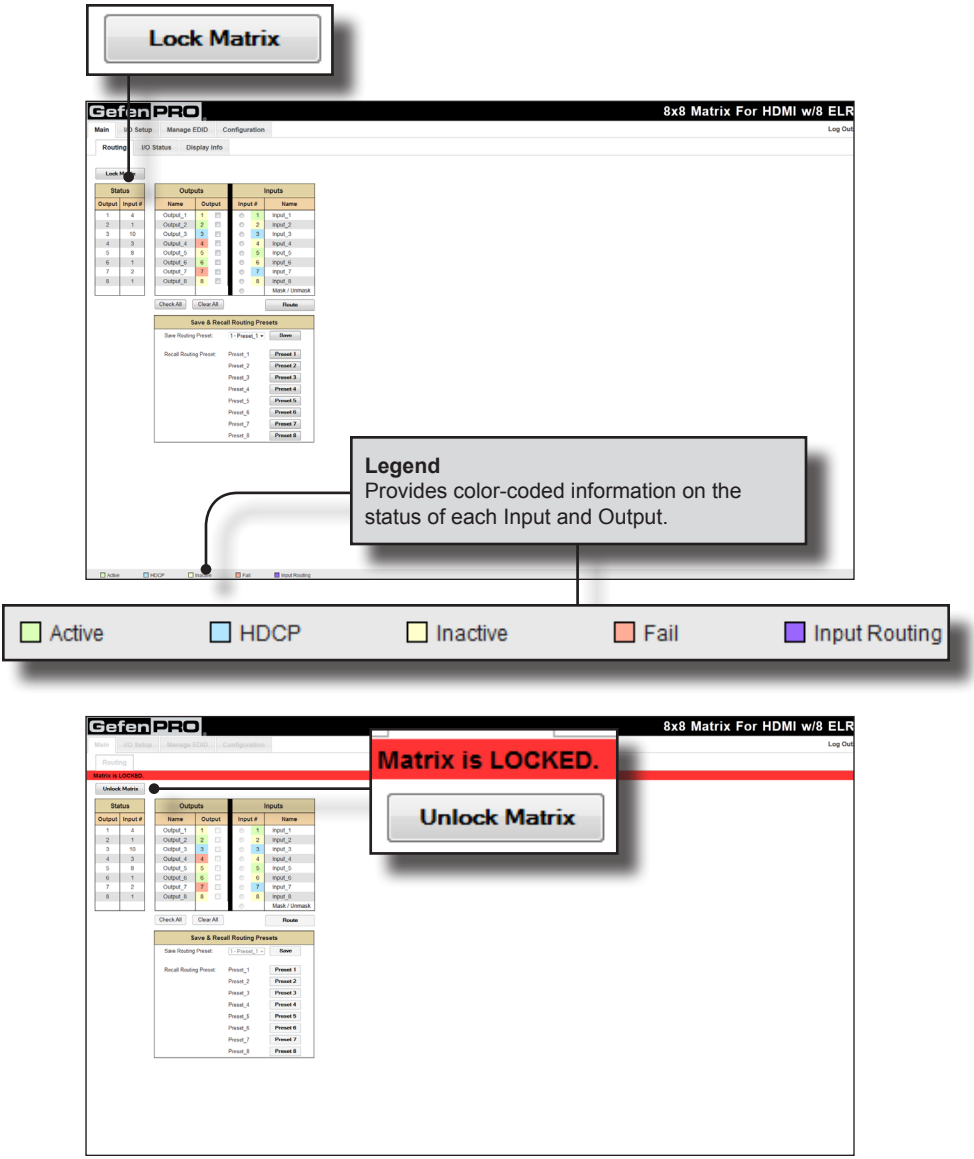


Input #
Click the radio button next to the desired input to be routed. Only one input can be selected at a time.

Name
Displays the current name of the input. The name of each input can be changed. See page 102 for more information.

Lock Matrix

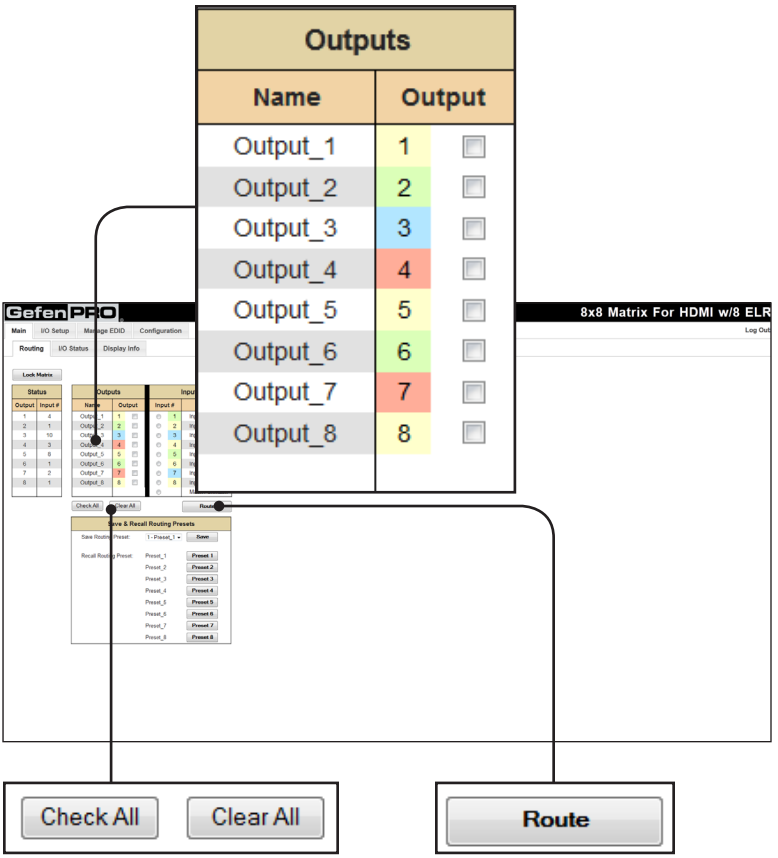
Locks / unlocks the matrix. When the matrix is locked, no modifications can be made using the Web GUI. When the matrix is locked, the button text will read “Unlock Matrix” and a red bar will appear across the top portion of the screen with the text “Matrix is LOCKED”. Click the “Unlock Matrix” button to unlock the matrix.



(continued on next page)

Name
Displays the current name of each output. The name of each input can be changed. Refer to the `#set_input_name` command on page 63 for details on naming inputs.

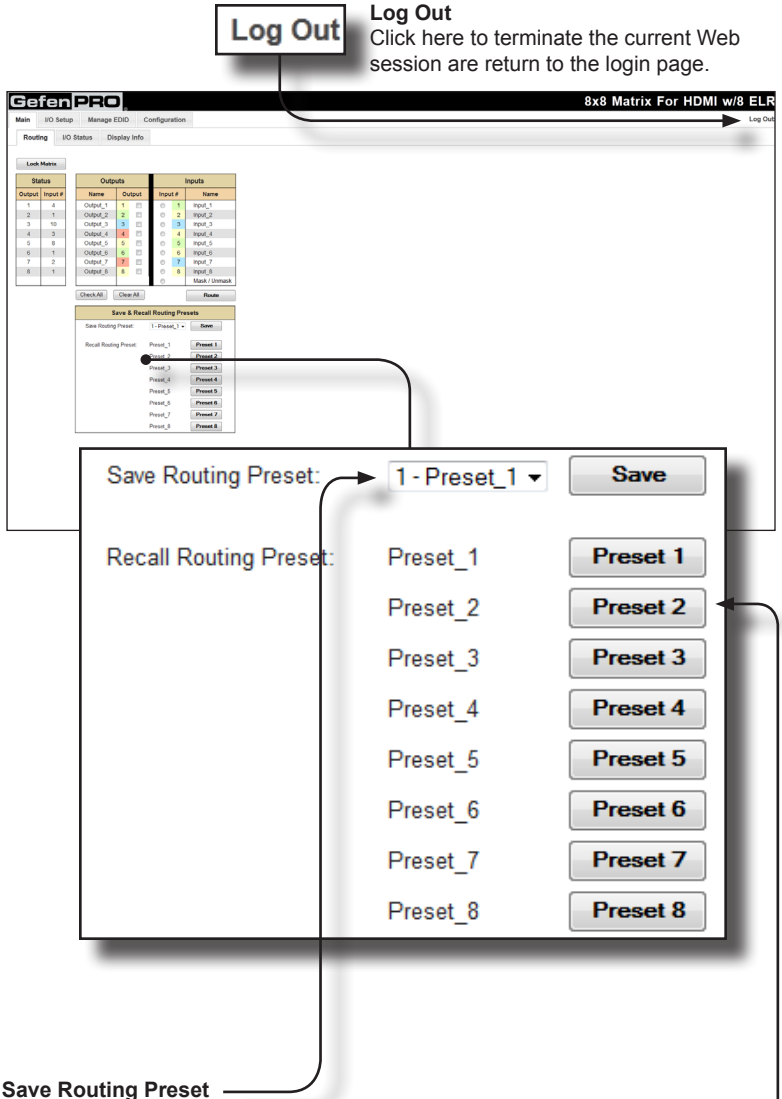
Output
Click to place a check mark in the box and select the desired output. Multiple outputs can be selected at a time.



Check All
Places a check mark in each box under the Output # column.

Clear All
Clears all check marks from the Output # column.

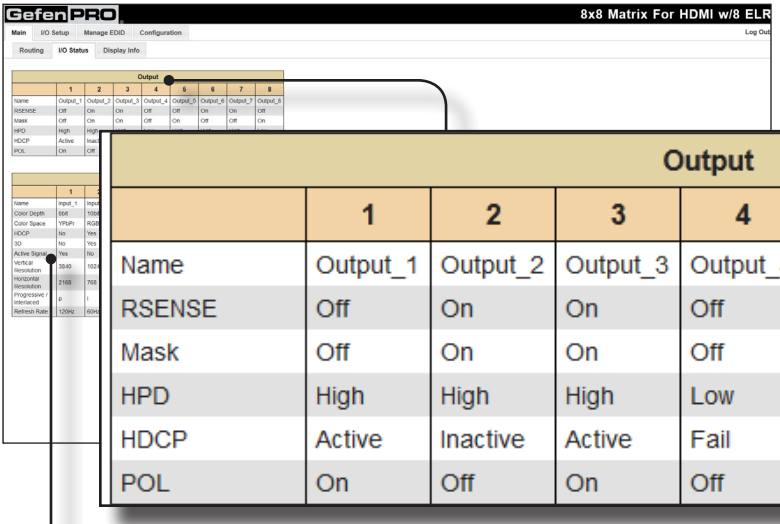
Route
Click this button to route the current input and output selection(s).



Save Routing Preset
Saves the current routing state to memory. Click the drop-down list to select the desired routing preset, then click the **Save** button to save the preset to memory.

Recall Routing Preset
Loads the selected routing state into memory. Click the desired button to load the desired routing preset into memory.

Main >> I/O Status



	Output			
	1	2	3	4
Name	Output_1	Output_2	Output_3	Output_4
RSENSE	Off	On	On	Off
Mask	Off	On	On	Off
HPD	High	High	High	Low
HDCP	Active	Inactive	Active	Fail
POL	On	Off	On	Off

Output
Displays the state of each output for each of the following: Output name, RSENSE, Mask, HPD (Hot-Plug Detect), HDCP, and POL.

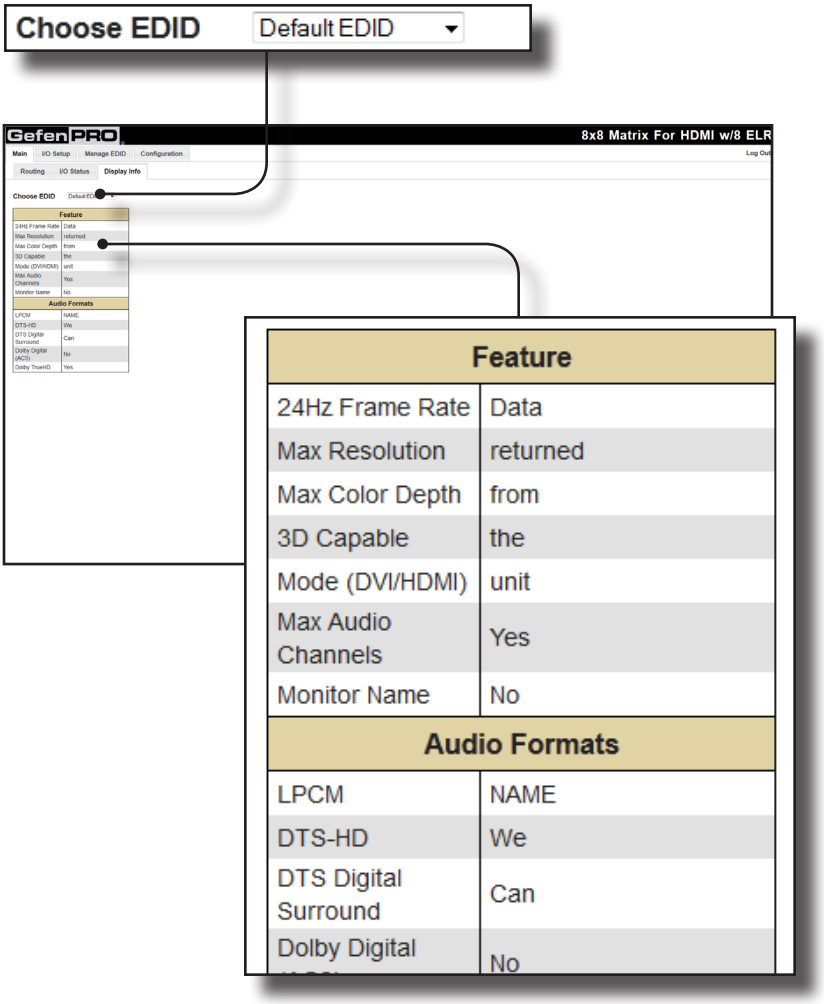
	Input				
	1	2	3	4	
Name	Input_1	Input_2	Input_3	Input_4	Inp
Color Depth	8bit	10bit	12bit	8bit	10
Color Space	YPbPr	RGB	YUV	YPbPr	RG
HDCP	No	Yes	Yes	No	No
3D	No	Yes	Yes	No	Ye
Active Signal	Yes	No	Yes	No	Ye
Vertical Resolution	3840	1024	1920	3840	10
Horizontal Resolution	2168	768	1200	2168	76
Progressive /					

Input
Displays the state of each input for each of the following: Input name, Color Depth, Color Space, HDCP, 3D, Active Signal, Vertical Resolution, Horizontal Resolution, Progressive / Interlaces, and Refresh Rate.

Main >> Display Info

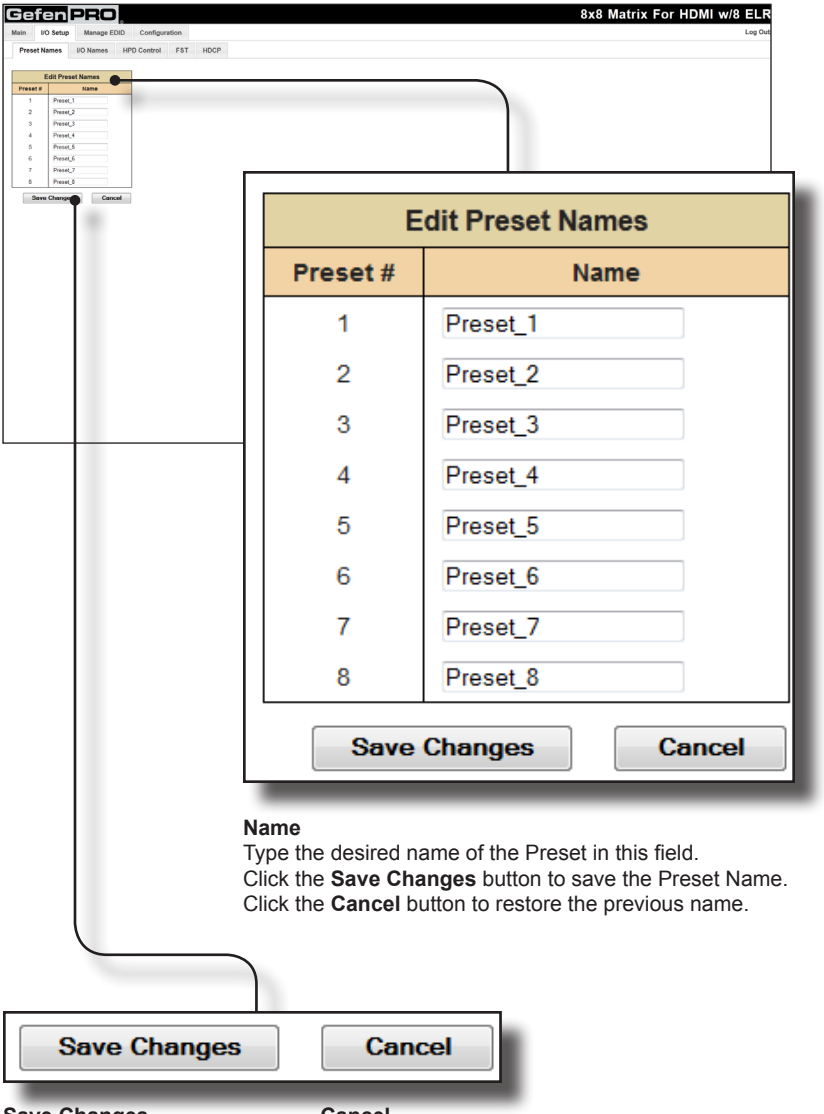
Choose EDID
Select the EDID from the drop-down list. The selected EDID will be copied from the selected EDID Bank or Output to the desired input(s) and used by the source.

Options:
Default EDID, Bank 1 ... Bank 8, Output 1 ... Output 8



Feature / Audio Formats
Displays the capabilities of the display (or sink device), based on the EDID.

I/O Setup >> Preset Names

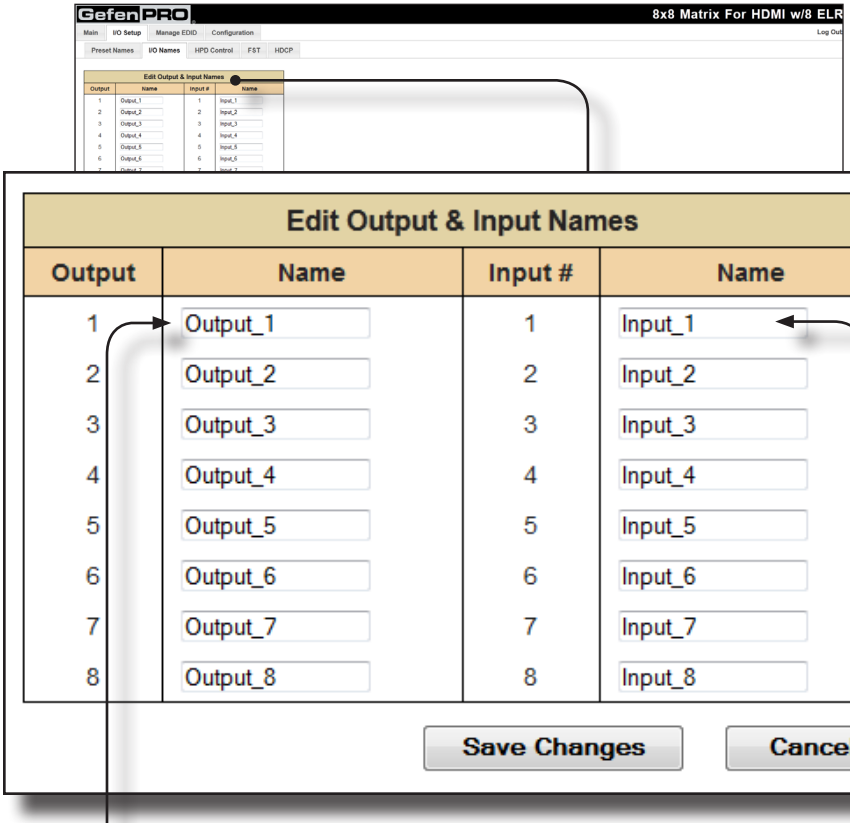


Name
Type the desired name of the Preset in this field.
Click the **Save Changes** button to save the Preset Name.
Click the **Cancel** button to restore the previous name.

Save Changes
Saves the current changes.

Cancel
Restores the previous names for each Preset, if a change was made.

I/O Setup >> I/O Names

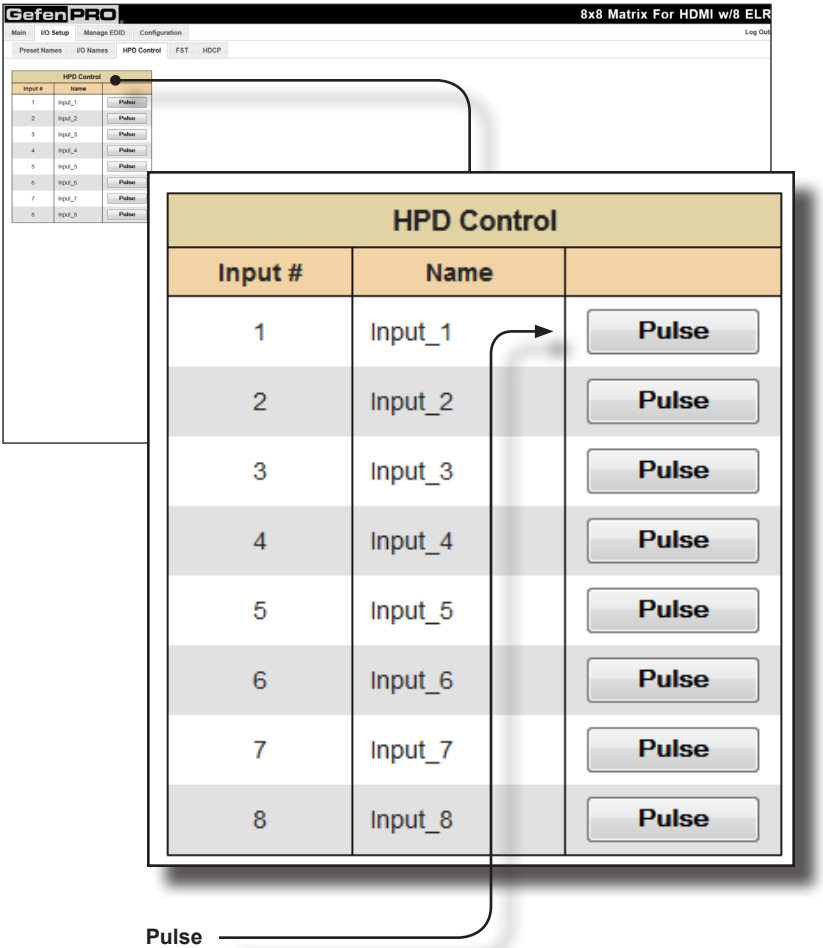


Save Changes
Saves the current changes.

Cancel
Restores the previous names for each Preset, if a change was made.

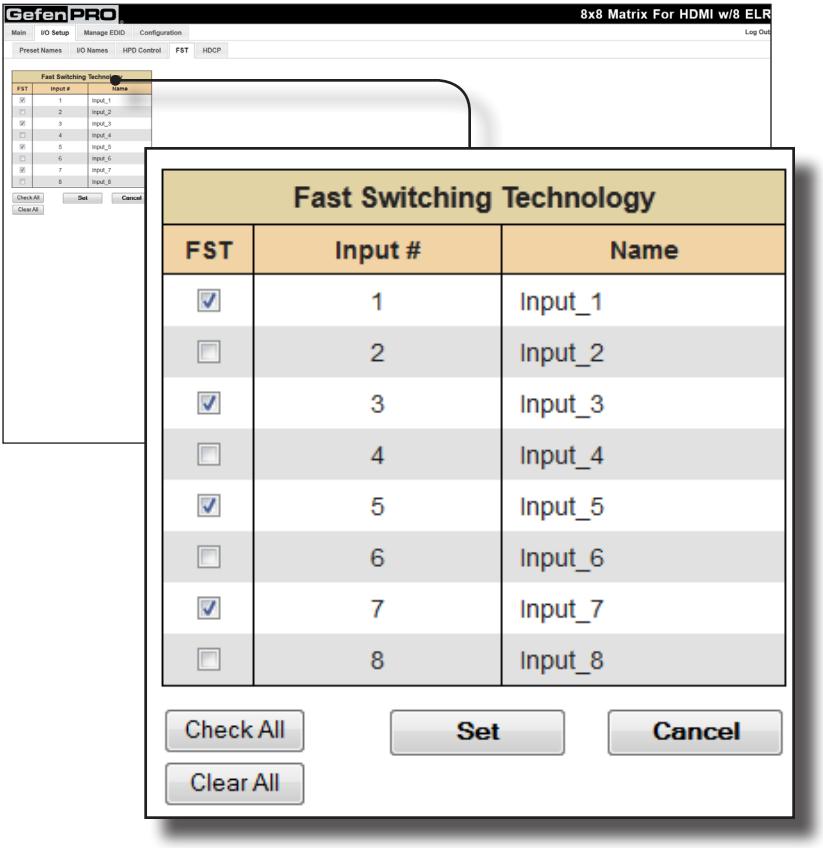
Name
Type the desired name of each Output or Input in these fields. Click the **Save Changes** button or click the **Cancel** button to restore the previous name.

I/O Setup >> HPD Control



Pulse
Click the Pulse button to cycle the HPD line on the desired input. This is the equivalent of physically disconnecting and reconnecting the HDMI cable between the source device and the matrix.

I/O Setup >> FST



FST
Click to select / deselect the desired input(s). Inputs with a check mark will *enable* the FST feature. Use the **Set** button to save changes.

Check All
Places a check mark in each box under the FST column.

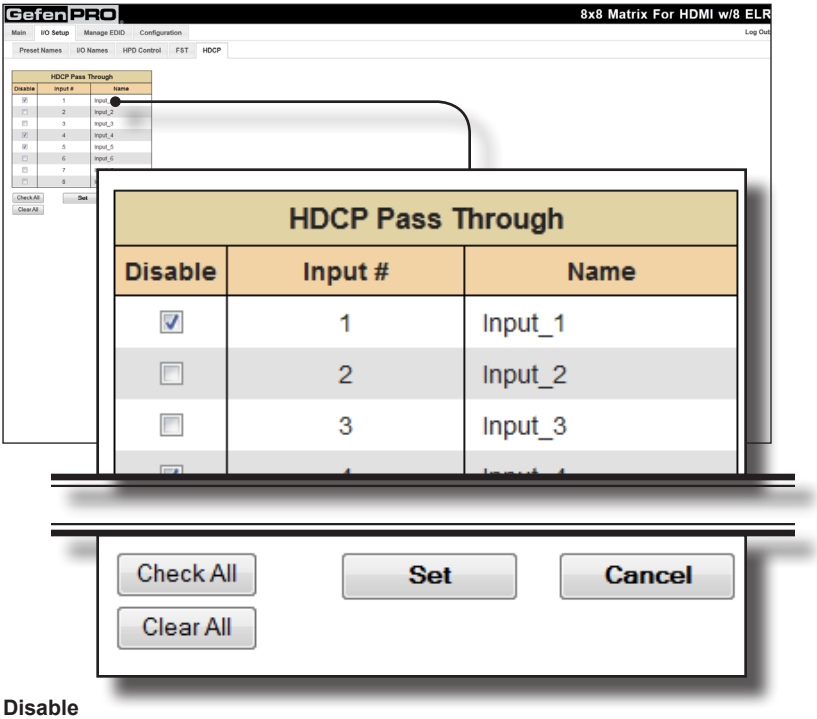
Clear All
Clears all check marks from the FST column.

Set
Click this button to save changes for all input(s). The Web GUI will display a prompt to verify the selected operation.

Cancel
Cancels the current operation and ignores changes for each input, if a change was made.

I/O Setup >> HDCP

NOTE: Some computers will enable HDCP if an HDCP-compliant display is detected. Use the Disable feature to force the computer to ignore detection of an HDCP-compliant display. Note that using the Disable feature does **not** decrypt HDCP content.



Disable
Click to select / deselect the desired input(s). Inputs with a check mark will *disable* the HDCP feature. Use the **Set** button to save changes.

Check All
Places a check mark in each box under the Disable column.

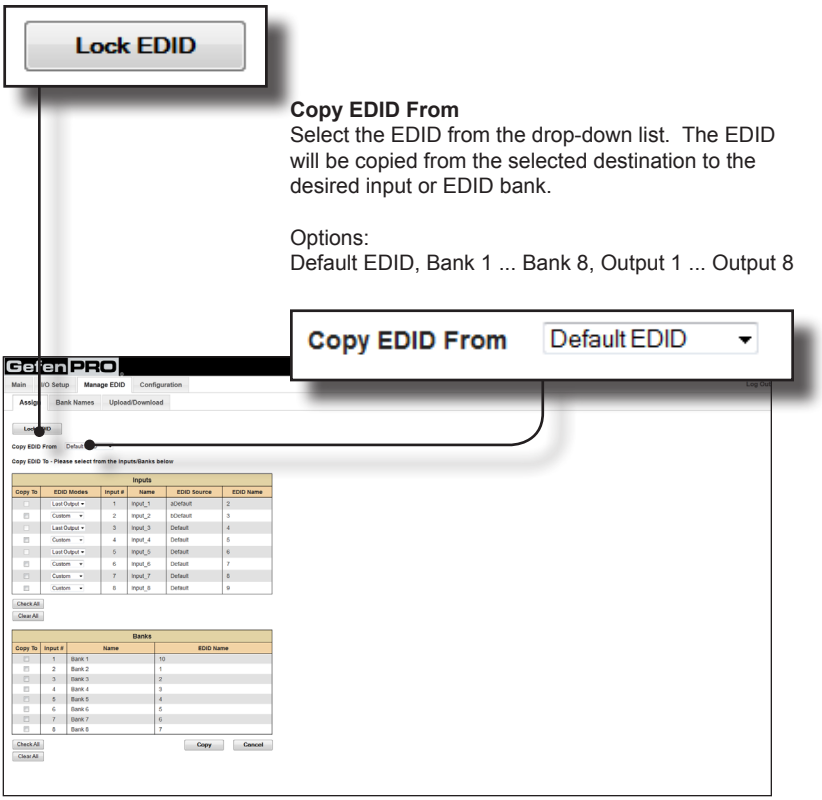
Clear All
Clears all check marks from the Disable column.

Set
Click this button to save changes for all input(s). The Web GUI will display a prompt to verify the selected operation.

Cancel
Cancels the current operation and ignores changes for each input, if a change was made.

Manage EDID >> Assign

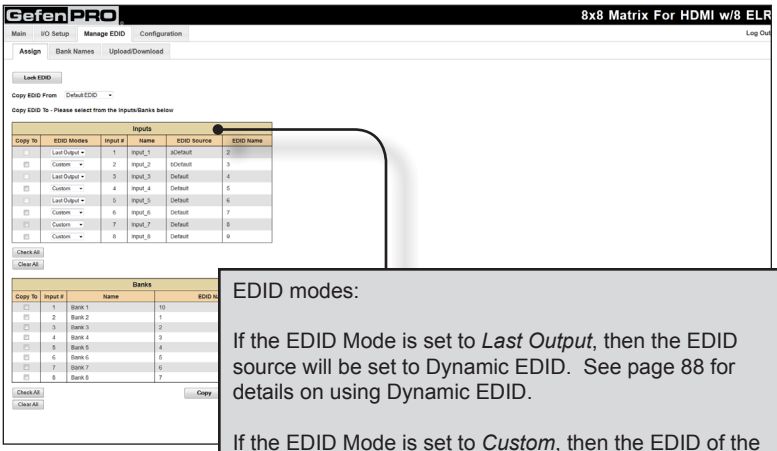
Lock EDID
Secures the Local EDID and disables the automatic loading after power-up. See the `#lock_edid` command on page 83 for more information.



Copy EDID From
Select the EDID from the drop-down list. The EDID will be copied from the selected destination to the desired input or EDID bank.

Options:
Default EDID, Bank 1 ... Bank 8, Output 1 ... Output 8

(continued on next page)



EDID modes:

If the EDID Mode is set to *Last Output*, then the EDID source will be set to Dynamic EDID. See page 88 for details on using Dynamic EDID.

If the EDID Mode is set to *Custom*, then the EDID of the display that is connected to Output 1 will be used.

Copy To
Click to select the desired input(s).

Inputs

Copy To	EDID Modes	Input #	Name	EDID Source	EDID Name
☐	Last Output	1	Input_1	aDefault	2
☐	Custom	2	Input_2	bDefault	3
☐	Last Output	3	Input_3	Default	4
☐	Custom	4	Input_4	Default	5
☐	Last Output	5	Input_5	Default	6
☐	Custom	6	Input_6	Default	7
☐	Custom	7	Input_7	Default	8
☐	Custom	8	Input_8	Default	9

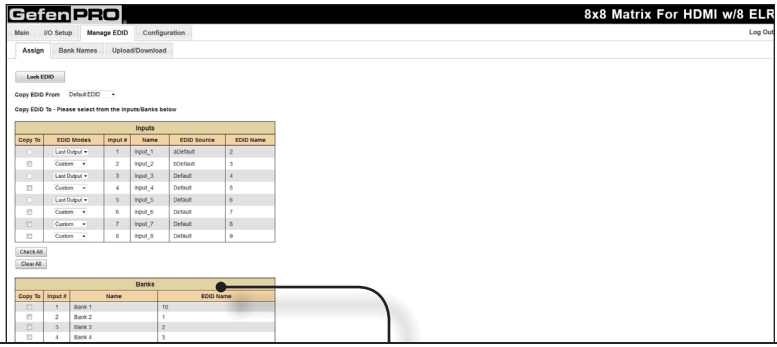
Check All
Clear All

EDID Modes
Click the drop-down list to select the EDID mode.

Options:
Custom, Last Output

Check All
Places a check mark in each box under the **Copy To** column.

Clear All
Clears all check marks from the **Copy To** column.



Banks

Copy To	Input #	Name	EDID Name
☐	1	Bank 1	10
☐	2	Bank 2	1
☐	3	Bank 3	2
☐	4	Bank 4	3
☐	5	Bank 5	4
☐	6	Bank 6	5
☐	7	Bank 7	6
☐	8	Bank 8	7

Check All

Clear All

Copy

Cancel

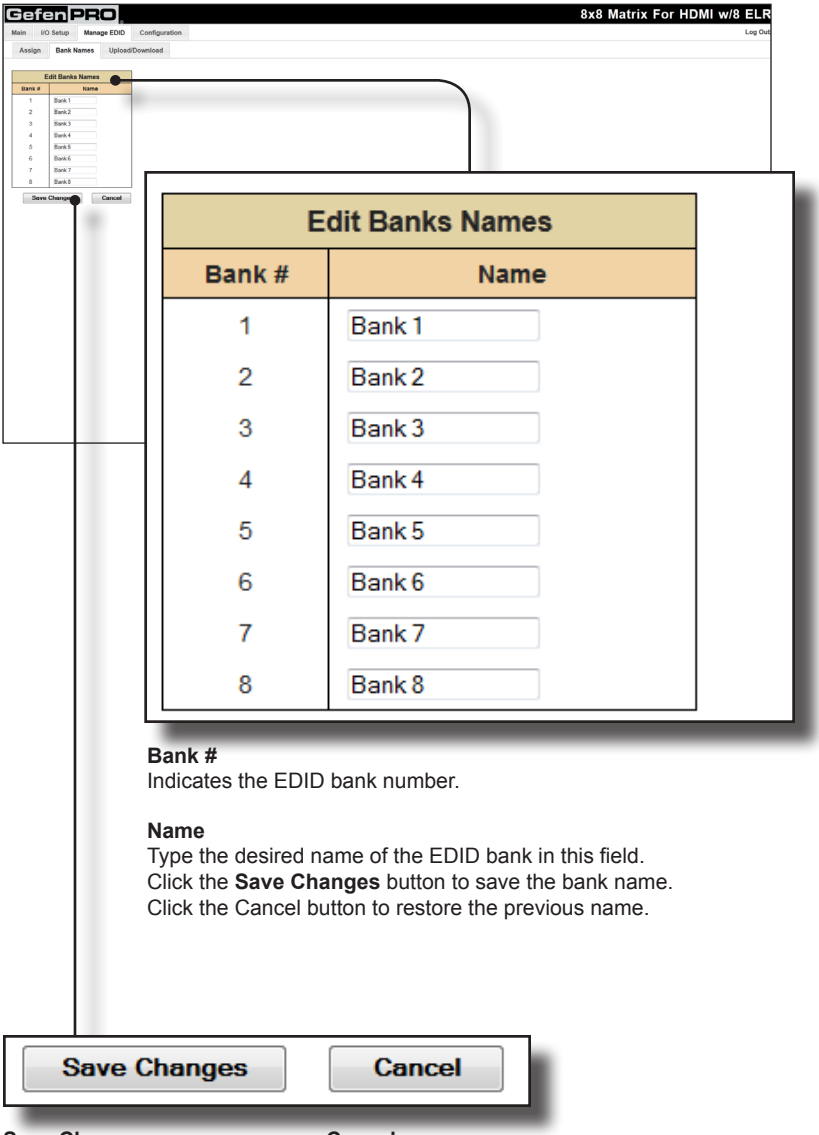
Copy To
Click this button to copy the specified EDID to the selected inputs / banks.

Cancel
Restores the previous EDID state for each input, if a change was made.

Check All
Places a check mark in each box under the **Copy To** column.

Clear All
Clears all check marks from the **Copy To** column.

Manage EDID >> Bank Names



Bank #
Indicates the EDID bank number.

Name
Type the desired name of the EDID bank in this field.
Click the **Save Changes** button to save the bank name.
Click the Cancel button to restore the previous name.

Save Changes
Saves the current name change to the EDID bank(s).

Cancel
Restores the previous names for each EDID bank, if a change was made.

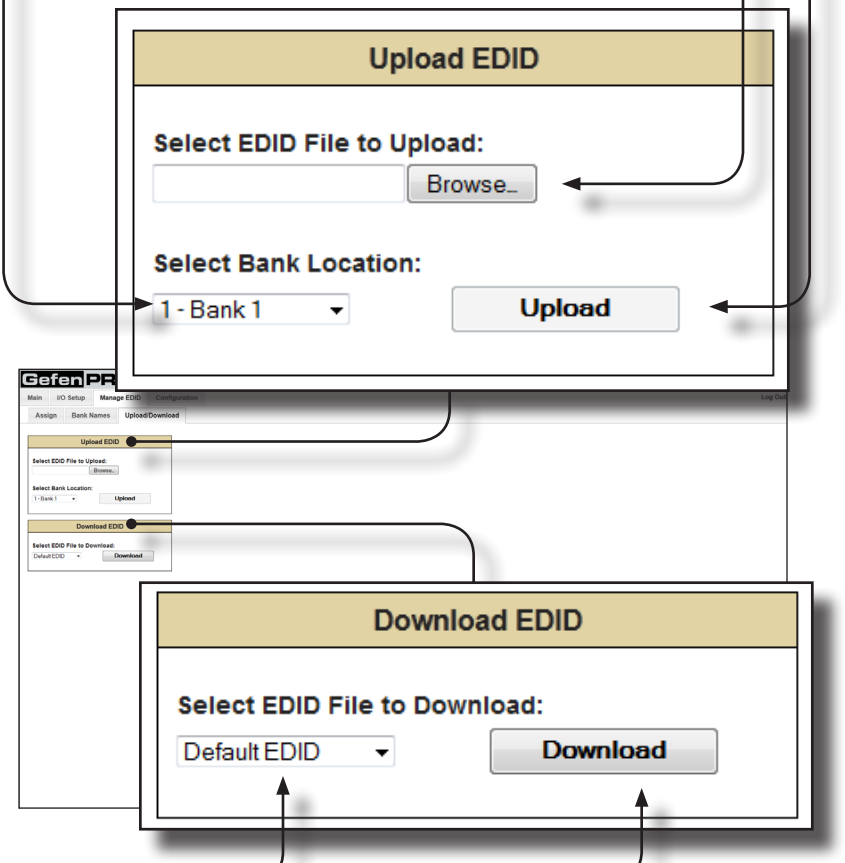
Manage EDID >> Upload / Download

Upload
Click this button to upload the EDID to the specified bank.

Select Bank Location
Click this drop-down list to select the bank to where the EDID will be uploaded.

Options:
Bank 1 ... Bank 8

Browse...
Click this button to select the EDID file to be uploaded.

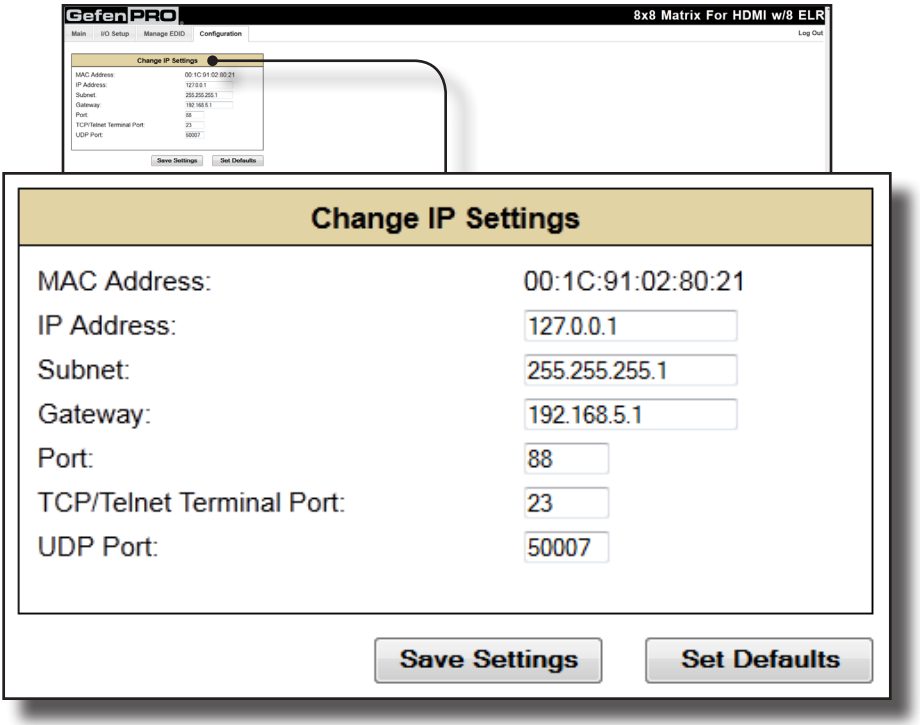


Drop-down list
Click this box to select the EDID that is to be saved to a file. The EDID file will be saved in binary format (.bin).

Options:
Bank 1 ... Bank 8, Output 1 ... Output 8, Input 1 ... Input 8

Download
Click this button to download the selected EDID to a file.

Configuration >> Change IP Settings

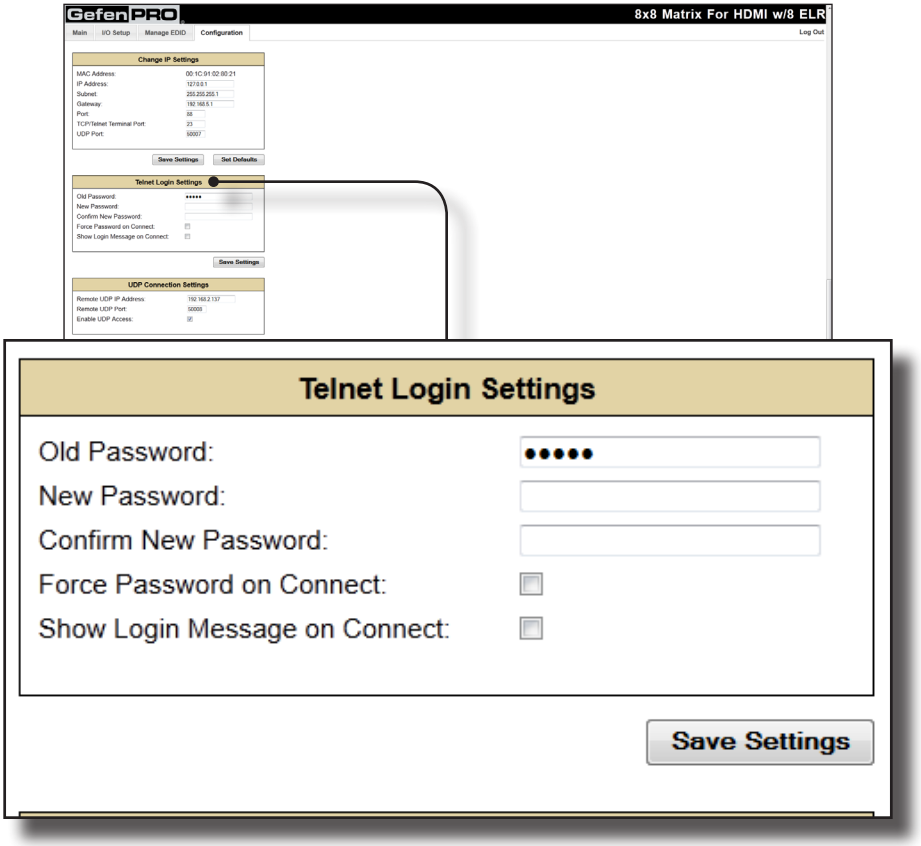


Change IP Settings
Assigns the IP address, subnet, gateway, HTTP listening port, Telnet port, and UDP port. The MAC address cannot be changed.

Save Settings
Saves the current settings for the Change IP Settings. After clicking this button, the Web interface will display a dialog indicating that the matrix must be rebooted for changes to take effect.

Set Defaults
Click this button to restore the factory-default IP settings. After clicking this button, the Web interface will display a dialog indicating that the matrix must be rebooted for changes to take effect.

Configuration >> Telnet Login Settings



Old Password
Type the current (old) password in this field.

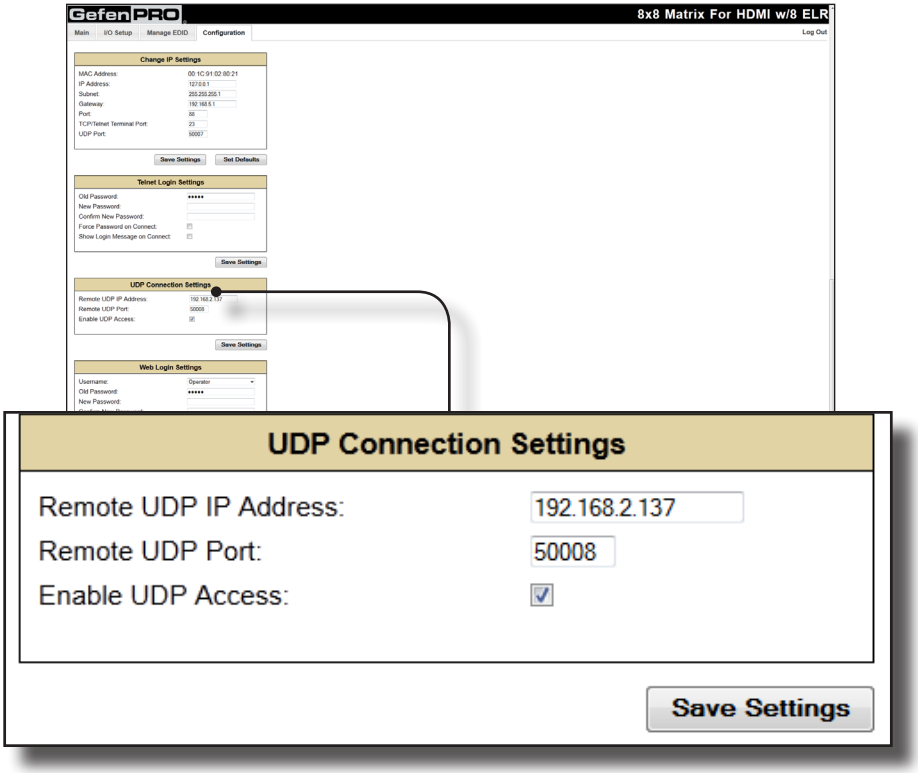
New Password
Type the new password in this field.

Force Password on Connect
Click this check box to have the matrix prompt for a password each time a Telnet session is started.

Show Login Message on Connect
Click this check box to have the matrix display the Telnet welcome message each time a Telnet session is started. The welcome message appears as: "Welcome to GEF-HDFST-848-8ELR TELNET"

Save Settings
Saves the current changes to the Telnet Login Settings.

Configuration >> UDP Connection Settings

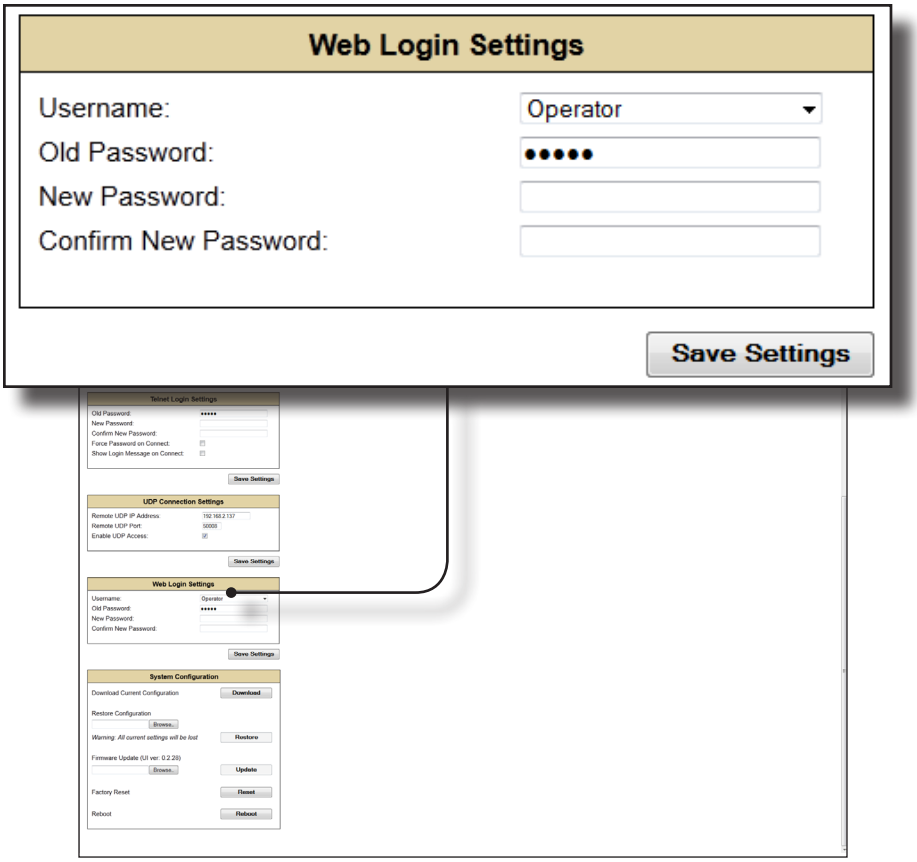


Remote UDP IP Address
Type the remote UDP IP address in this text box.

Remote UDP Port
Enter the remote UDP port in this text box.

Enable UDP Access
Check this box to enable UDP access. If this box is unchecked, the UDP access will be unavailable.

Configuration >> Web Login Settings



Username
Click this drop-down list to select the username to be changed.

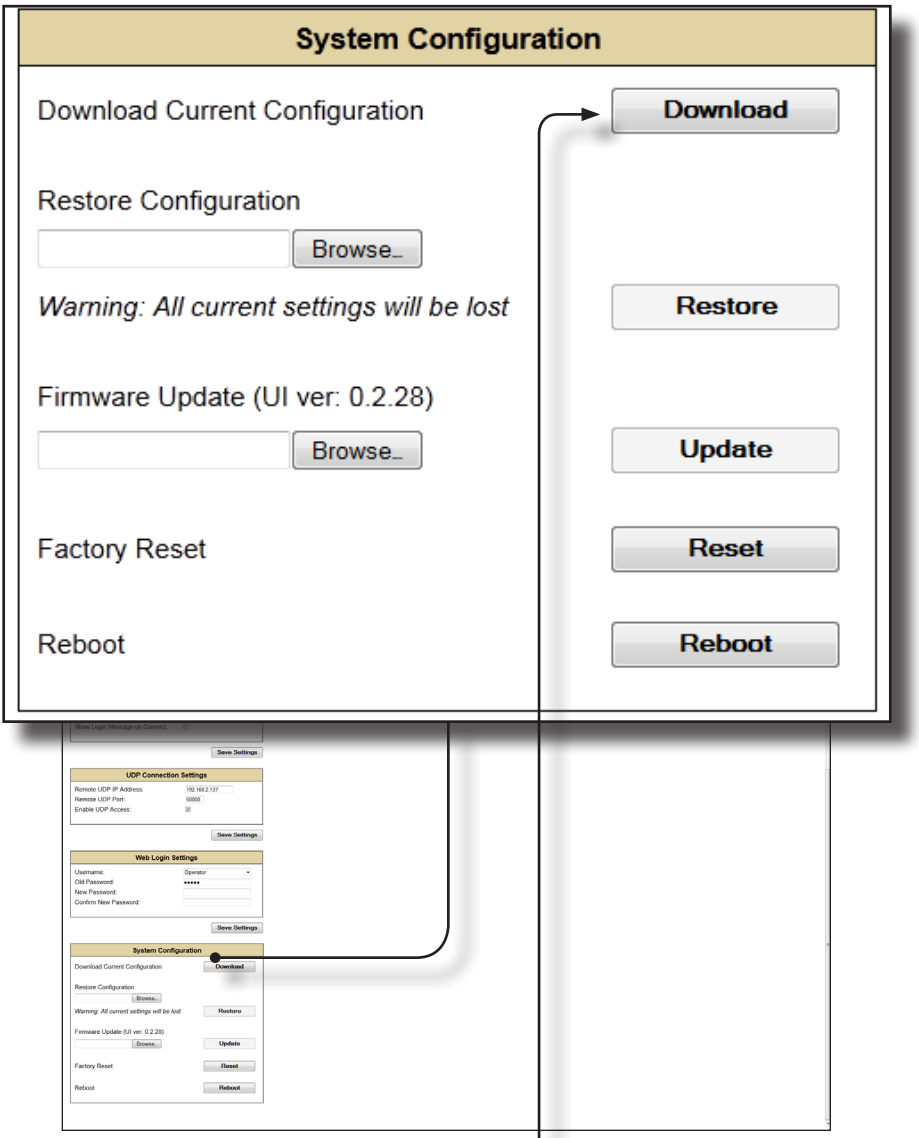
Old Password
Type the current (old) password in this field.

New Password
Type the new password in this field.

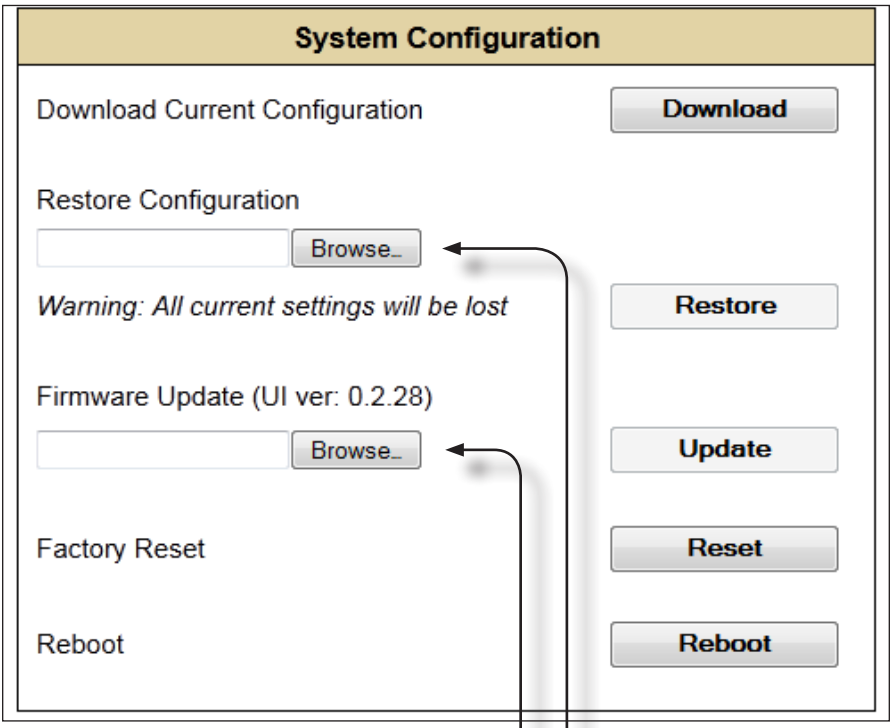
Confirm Password
Re-type the new password in this field.

Save Settings
Saves the current changes to the Web Login Settings.

Configuration >> System Configuration



Download Current Configuration
Click this button to download the current configuration to a file.



Browse
Click this button to select the firmware file to be uploaded. See the next for details on updating the firmware.

Browse
Click this button to select the saved configuration file to be loaded into memory.

Restore
Uploads the selected configuration file to the matrix.

Update
Updates the matrix with the selected firmware file.

Reset
Click this button to set the matrix to factory-default settings. The IP settings are preserved.

Reboot
Click this button to reboot the matrix.

Firmware Update Procedure (over IP)

IMPORTANT: *DO NOT* power-off or disconnect the AC power cord from the matrix, at any time, during the firmware upgrade process.

1. Make sure the 8x8 Matrix for HDMI is powered.
2. Connect an Ethernet cable between the matrix and the computer running the Web GUI.
3. Go to the **Configuration** tab in the Web GUI and click the **Browse...** button under the **System Configuration** section.
4. Select the firmware file and click the **Update** button
5. The matrix will prompt you to verify that you want to overwrite the current firmware. Click the **OK** button on the Web GUI dialog to begin uploading the firmware file.
6. Once the firmware file has been uploaded, the matrix will verify the firmware content. The front-panel LCM will display the following if the firmware passes:

7. After the firmware file integrity has been verified, the matrix will begin the upgrade procedure. The upgrade progress will be displayed in the front-panel LCM.

8. After the matrix has been updated, the unit will automatically initiate a countdown to reboot. The **Power** button can be pressed to bypass the countdown without harming the upgrade process. The LCM will display the following message:

9. After the matrix reboots, the firmware upgrade process will be complete.

Firmware Update Procedure (over USB)

IMPORTANT: *DO NOT* power-off or disconnect the AC power cord from the matrix, at any time, during the firmware upgrade process.

1. Download the firmware update from the Support section of the Gefen Web site.
2. Power-ON the 8x8 Matrix for HDMI.
3. Connect a USB cable between the computer and the 8x8 Matrix for HDMI.

   It is unnecessary to disconnect any cables from the 8x8 Matrix for HDMI during the update process.

4. Once the computer is able to connect to the 8x8 Matrix for HDMI, a Removable disk icon will be displayed under My Computer. The following will be displayed on the front-panel LCD:

5. Extract the firmware file from the .ZIP file and drag the .bin file to the Removable Disk. The 8x8 Matrix for HDMI will indicate that the firmware is being copied.

6. Once the firmware has been successfully copied, the following message will be displayed:

7. Disconnect the USB cable from the computer.

8. The matrix will verify the firmware content. The front-panel LCM will display the following if the firmware passes:

9. After the firmware file integrity has been verified, the matrix will begin the upgrade procedure. The upgrade progress will be displayed in the front-panel LCM.

10. After the matrix has been updated, the unit will automatically initiate a countdown to reboot. The **Power** button can be pressed to bypass the countdown without harming the upgrade process.

11. After the matrix reboots, the firmware upgrade process will be complete.

a. Maximum recommended ambient temperature: 40 ˚C (104 ˚F).

b. Increase the air flow as needed to maintain the recommended temperature inside the rack.

c. Do not exceed maximum weight loads for the rack. Install heavier equipment in the lower part of the rack to maintain stability.

SPECIFICATIONS

Maximum Pixel Clock.....225 MHz

Video Input Connectors (Matrix)..... (8) HDMI Type A, 19-pin, female, locking

Video Output Connectors (Matrix)..... (8) ELR-POL RJ-45, female

ELR-POL Connector (Receiver)..... (1) RJ-45, female

Video Output Connector (Receiver)..... (1) HDMI Type A 19-pin, female, locking

USB Port (Matrix)..... Mini-B, female

Ethernet Port (Matrix)..... (1) RJ45, female, 10/100 BaseT

RS-232 Port (Matrix)..... (1) DB-9, female

IR Extender Port (Matrix)..... (1) 3.5mm mini-stereo jack

IR Input Port (Matrix)..... (9) 3.5mm mini-mono jacks

IR Output Port (Matrix)..... (9) 3.5mm mini-mono jacks

IR Extender Port (Receiver)..... (1) 3.5mm mini-stereo jack

IR Output Port (Receiver)..... (1) 3.5mm mini-mono jack

Power Supply..... 100V to 240V AC 50/60 Hz, Internal

Power Consumption (Matrix)..... 200W (max.)

Operating Temperature.....+32 to 104 °F (0 to + 40 °C)

Rack mounting requirements (Matrix)..... Standard 19” rack, 2U high

Dimensions (W x H x D) (Matrix).....17.25” x 3.5” x 12”
(440mm x 89mm x 305mm)

Dimensions (W x H x D) (Receiver)..... 4.4” x 1.1” x 3.35”
(110mm x 27mm x 85mm)

Shipping Weight (1 Matrix with 8 Receivers)..... 40 lbs. (18 kg)

Gefen warrants the equipment it manufactures to be free from defects in material and workmanship.

If equipment fails because of such defects and Gefen is notified within two (2) years from the date of shipment, Gefen will, at its option, repair or replace the equipment, provided that the equipment has not been subjected to mechanical, electrical, or other abuse or modifications. Equipment that fails under conditions other than those covered will be repaired at the current price of parts and labor in effect at the time of repair. Such repairs are warranted for ninety (90) days from the day of reshipment to the Buyer.

This warranty is in lieu of all other warranties expressed or implied, including without limitation, any implied warranty or merchantability or fitness for any particular purpose, all of which are expressly disclaimed.

1. Proof of sale may be required in order to claim warranty.

2. Customers outside the US are responsible for shipping charges to and from Gefen.

3. Copper cables are limited to a 30 day warranty and cables must be in their original condition.

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For the latest warranty coverage information, refer to the Warranty and Return Policy under the Support section of the Gefen Web site at www.gefen.com.

PRODUCT REGISTRATION

Please register your product online by visiting the Register Product page under the Support section of the Gefen Web site.

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GEF-HDFST-848-8ELR

Rev A5

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www.gefenpro.com support@gefenpro.com

This product uses UL or CE listed power supplies.